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THE MEMPHIS DEPOT
TENNESSEE

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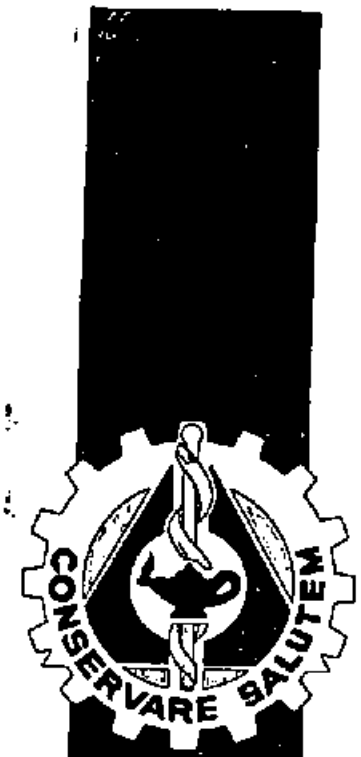

UNITED STATES ARMY ENVIRONMENTAL HYGIENE AGENCY

ABERDEEN PROVING GROUND, MD 21010-5422

ENVIRONMENTAL AUDIT NO. 43-21-1387-86
DEFENSE DEPOT MEMPHIS
MEMPHIS, TENNESSEE
8-18 JULY 1985

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DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO ATTENTION OF

HSHB-EA-A

25 Nov 1985

SUBJECT: Environmental Audit No. 43-21-1387-86, Defense Depot Memphis, Memphis, Tennessee, 8-18 July 1985

Director
Defense Logistics Agency
ATTN: DLA-WS
Alexandria, VA 22304-6100

Copies of report with Executive Summary are enclosed.

FOR THE COMMANDER:

for KARL J. DAUBEL
Colonel, MS
Director, Environmental Quality

Encl

CF:
HQDA(DASG-PSP) (wo/encl)
Cdr, HSC (HSCL-P) (w/encl)
Comdt, AHS (HSHA-IPM) (w/encl)
Cdr, DOEAMC (PVNTMED Svc) (w/encl)
Cdr, MEDDAC, Ft Campbell (PVNTMED Svc) (2 cy) (w/encl)
Cdr, USAEHA Fld Spt Actv, Ft McPherson (w/encl)

DEPARTMENT OF THE ARMY
U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO ATTENTION OF

HSHB-EA-A

EXECUTIVE SUMMARY
ENVIRONMENTAL AUDIT NO. 43-21-1387-86
DEFENSE DEPOT MEMPHIS
MEMPHIS, TENNESSEE
8-18 JULY 1985

1. PURPOSE. To ensure compliance with all applicable Federal, State, and local environmental regulations; to assist in the identification of existing or potential environmental hazards; and to help improve existing Defense Depot Memphis (DDMT) environmental programs to include the areas of air pollution, ground water, hazardous waste, solid waste, and water quality.

2. ESSENTIAL FINDINGS.

a. At the present time, the responsibilities of establishing an overall environmental program at DDMT are accomplished within the Facilities Engineering Division. Due to the recent depot reorganization, and past policies regarding the implementation of the environmental program, the program appears to be severely fragmented. Although several competent individuals are tasked with performing the day-to-day requirements of depot environmental issues, no one person has total responsibility of the development, implementation, and direction of a sound and thorough environmental program. It has been evident throughout the performance of this environmental audit that an environmental coordinator must be established at the depot to provide a focal point for all environmental issues and concerns. This individual would be responsible for ensuring compliance with all Federal, State and local regulations, as well as establishing a program to identify existing or potential environmental hazards.

b. The State of Tennessee requires that owners of certain air contaminant sources apply for and obtain construction and/or operating permits in accordance with Chapter 1200-3-9 of the Tennessee Air Pollution Control Regulations. Records indicate that the current operating permits have expired and that these permits need updating in order to accurately reflect current operating status. Proper construction permits were not obtained for the installation of the incinerator in Bldg 359 and the paint spray booth located in Bldg 1086.

c. Current abrasive blasting operations in Bldg 1088 and S-1089, and the outside blasting site located at the corner of 25th and G Streets, have the potential to violate State visible emissions and fugitive dust standards.

d. Major stock item primer and enamel spray-painting operations conducted at Bldg 1087 possess the potential to violate State visible emissions standards.

e. The installation has not sufficiently identified the locations of asbestos at DDMT. In addition, the depot has not developed a standing operating procedure relevant to asbestos removal and disposal, as well as personal protection during such operations which would ensure compliance with Federal and State regulations.

f. Previous work by US Army Toxic and Hazardous Materials Agency and this Agency identified the Dunn Field burial sites, the pentachlorophenol dip vat, and the spill accumulations in the old repackaging area at 21st and E Streets as sites of potential ground-water contamination.

g. Other sites of potential ground-water contamination identified during the audit include the eighteen underground storage tanks, and the spill accumulations in the Defense Reutilization and Marketing Office (DRMO) yard and in the outdoor storage areas east and north of Bldg 5873.

h. There are six functional ground-water monitoring wells around the Dunn Field burial sites.

i. Hazardous material (HM) spill residues were improperly packaged prior to turn in to the DRMO for disposal.

j. A HM spill in an open storage area adjacent to Bldg 873 resulted in the generation of hazardous waste (HW) (i.e., contaminated soil) and the release of that HW into the environment.

k. Drums containing unidentified wastes were stored in an open storage area near the DRMO storage yard.

l. Some DDMT maintenance activities disposed of used solvents as HW.

m. The DRMO disposed of all empty HM containers as HW; a practice that may be unnecessary.

n. The DDMT has neither developed nor implemented a comprehensive HW management program.

o. There is no central authority responsible for implementing the solid waste program and providing a solid waste management plan and SOP's.

p. Although a good effort was being made to keep daily and monthly solid waste collection records, the use of incorrect container volumes invalidates the records.

q. Both compacted and uncompacted wastes are disposed at the Holmes Landfill by DDMT.

r. Potable water supplied to DDMT by Memphis Light, Gas and Water Department (MLGWD) conforms to regulatory quality requirements and is provided in adequate amounts and at a sufficient pressure.

s. Bacteriological surveillance of potable water quality at DDMT is commendable.

t. Disinfection of repaired depressurized small water main segments followed by bacteriological testing was not performed.

u. Cross-connection control activities, while good, did not appear to be formalized.

v. Swimming pool operation/maintenance practices were superb.

w. Discharge of wastewater to the City of Memphis sewerage system is in accordance with a current sewer use agreement.

x. A current National Pollutant Discharge Elimination System (NPDES) permit which governs surface water discharges is in effect. Required monitoring is performed under contract. Necessary reporting to the EPA is performed.

y. The swimming pool filter washwater discharge may have to be regulated under the NPDES permit. If regulation is required, alternative connection to a nearby sanitary sewer may be possible.

z. Some problems associated with the NPDES permit occurred but did not result in any noncompliance actions.

aa. The SPCCP is not current.

bb. Operational and maintenance-type practices in relation to spill prevention were lacking.

cc. Many spill events were not responded to prior to this audit.

dd. The Hazardous Materials Warehouse and Recoupment Facility will improve spill prevention and control.

ee. Updating and verification of the existing inventory of all underground storage tanks appears to be required.

ff. The hydrostatic testing program for all underground tanks has not been implemented.

gg. The Installation Spill Contingency Plan (ISCP) is not up-to-date.

hh. Considerable spill response training appears to be provided.

3. MAJOR RECOMMENDATIONS.

a. Establish as a minimum a depot environmental coordinator whose sole responsibilities deal with the establishment and implementation of a consolidated depot environmental program.

b. Coordinate with the Memphis and Shelby County Health Department, and obtain and/or update installation air pollution permits. Ensure that proper air contaminant source construction permits are obtained prior to the installation of future air pollution sources.

c. Expedite the scheduled construction of the dry filter-type paint spray booth in Bldg 1086 in order to replace current spray painting operations at Bldg 1087 to ensure compliance with state visible emission standards.

d. Ensure reasonable precautions are employed to provide adequate containment of abrasive material during abrasive blasting operations. Such precautions include the closing of the doors at Bldg 1088 while blasting, and the cessation of current outside abrasive blasting on the concrete pad located at the corner of 25th and G Streets.

e. Implement a program to identify the location of asbestos insulation on the installation, and establish a SOP relevant to asbestos removal, disposal, and personal protection in accordance with Federal and State regulations.

f. Sample the six ground-water monitoring wells around the Dunn Field burial sites for selected metals, nonmetal inorganics, and the organic priority pollutant compounds.

g. Identify any leaking underground storage tanks and determine if the ground-water quality has been affected.

h. Properly package HM spill residues prior to turn-in to the DRMO for disposal.

i. Remove any leaking containers from the outdoor storage areas in order to reduce the potential for ground-water contamination.

j. Determine the quantity of HM that has spilled at the storage area adjacent to Bldg 873, and if necessary, notify the National Response Center.

k. Recycle all used solvents generated at DDMT.

l. Determine, by laboratory analyses, whether the unidentified wastes stored in drums near the DRMO storage yard are HW's and dispose of them accordingly.

m. Dispose as HW only those empty HM containers that do not satisfy the regulatory definition of "empty."

n. Develop and implement a comprehensive HW Management Program that includes the components described in the USAEHA Technical Guide Number 136.

o. Establish responsibility for the solid waste management program under an environmental coordinator who would function as the central authority for implementing the program, develop SOP's, and provide guidance to the refuse collection staff.

p. Take only compacted waste to the Holmes Landfill.

q. Modify the present recordkeeping system to accurately account for the volumes of all wastes disposed.

r. Follow proper disinfection procedures, including bacteriological testing, for all repaired depressurized small water main segments.

s. Ensure existence of a formal cross-connection control program.

t. Contact US Environmental Protection Agency Region IV to determine if the swimming pool filter washwater discharge requires regulation under the NPDES permit.

u. Amend/update the SPCCP.

v. Improve operational and maintenance-type practices at potential spill sites.

w. Provide timely effective response to all spill incidents.

x. Pursue the Hazardous Materials Warehouse and Recoupment Facility MILCON projects ASAP.

y. Update/verify the existing inventory of all underground storage tanks.

z. Institute the program for hydrostatic testing of all UG tanks.

aa. Amend/update the ISCP.

bb. Continue to ensure spill response training is provided, and especially to all new involved personnel.

CONTENTS

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO ATTENTION OF

HSHB-EA-A

ENVIRONMENTAL AUDIT NO. 43-21-1387-86
DEFENSE DEPOT MEMPHIS
MEMPHIS, TENNESSEE
8-18 JULY 1985

1. AUTHORITY.

a. Interservice Support Agreement, H23MHP-85219-001, USAEHA/DLA, effective through 30 September 1988.

b. Letter, USAEHA, HSHB-E-A/WP, 24 August 1984, subject: USAEHA Mission Services, FY 85.

2. REFERENCE. Letter, USAEHA, HSHB-EA/WP, 4 February 1985, subject: Draft Protocol, US Army Environmental Hygiene Agency, Directorate of Environmental Quality Environmental Audit.

3. PURPOSE. To ensure compliance with all applicable Federal, State, and local environmental regulations; to assist in the identification of existing or potential environmental hazards; and to help improve existing Defense Depot Memphis (DDMT) environmental programs to include the areas of air pollution, ground water, hazardous waste, solid waste, and water quality.

4. GENERAL.

a. Abbreviations and Definitions. See Appendix A.

b. Personnel Contacted. See Appendix B.

c. Personnel Conducting the Audit.

(1) This audit was accomplished by an interdisciplinary team of scientists and engineers from the Directorate of Environmental Quality, USAEHA. The team included the following individuals:

(a) CPT Stephen Jenness - Sanitary Engineer, Air Pollution Engineering Division, responsible for program management and air pollution evaluations.

(b) CPT Michael Leggieri, Jr. - Environmental Science Officer, Waste Disposal Engineering Division, responsible for the hazardous waste evaluation.

(c) Mr. Jerry A. Valcik - Chemical Engineer, Water Quality Engineering Division, responsible for the water quality evaluation.

(d) Ms. Kim Fleischmann - Environmental Scientist, Waste Disposal Engineering Division, responsible for the ground water and solid waste evaluations.

(2) The members of the audit team wish to extend their appreciation to the DDMT personnel who assisted in the completion of the environmental audit.

d. Background.

(1) Mission. As a major field installation of DLA, the DDMT warehouses and distributes supplies common to all American military services and some civil agencies located primarily in the south central US. In addition, DDMT is responsible for a limited amount of overseas shipments. Stock items include food; clothing and textiles; electronic items; petroleum products; and construction, industrial, medical, and general supplies.

(2) Geographic Location. The DDMT, located within the city limits and approximately 2 miles from the center of Memphis, is situated in Shelby County. The installation, which encompasses 642 acres, is bounded on the north by Dunn Avenue, the east by Airways Boulevard and a residential/ commercial area, the south by Ball Road, and the west by Perry Road. Area and installation maps are provided as Figures 1 and 2. The topography for the area is flat to gently rolling, with DDMT located approximately 250 feet above sea level.

(3) Climatology. The climate at DDMT is moderate, but due to influences from the Gulf of Mexico and western Canada, is subject to frequent changes in weather. Average monthly temperatures in the Memphis area range from 81.4 °F (27.4 °C) in July to 40.9 °F (4.9 °C) in January, with an annual average of 61.9 °F (16.6 °C). Rainfall is fairly well distributed throughout the year and averages 49.2 inches. Snowfall for the region averages 5.5 inches/year. Winds are predominantly from the south, with an average annual windspeed of 8.7 mph (3.9 m/sec). Relative humidity averages about 70 percent for the year.

e. DDMT Operations. The DLA's basic mission responsibilities fall into three major categories: contracting and supply support, contract administration, and logistic services. In order to accomplish these responsibilities, DDMT is organized into three components: the central staff element, the mission elements, and attached activities. The majority of the facilities visited during this environmental audit focused on the mission elements of the Directorate of Distribution and the Office of Installation Services; and the attached activities of the Defense Reutilization and Marketing Office (DRMO) and the Defense Industrial Plant Equipment Center (DIPEC).

(1) Directorate of Distribution. The Directorate of Distribution is responsible for the receipt, storage, care, packing and shipment of

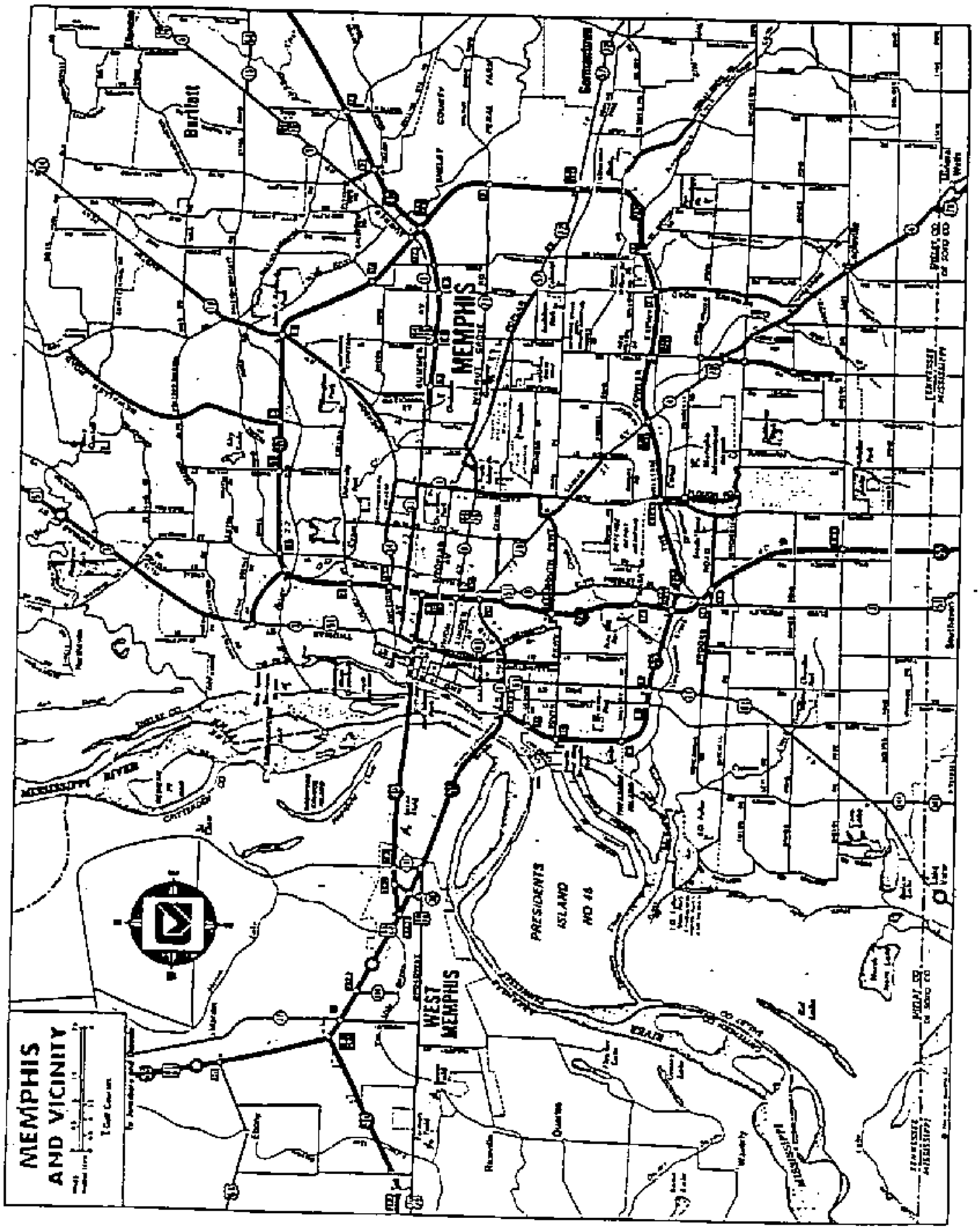

Figure 1. Area Map Of Memphis, Tennessee

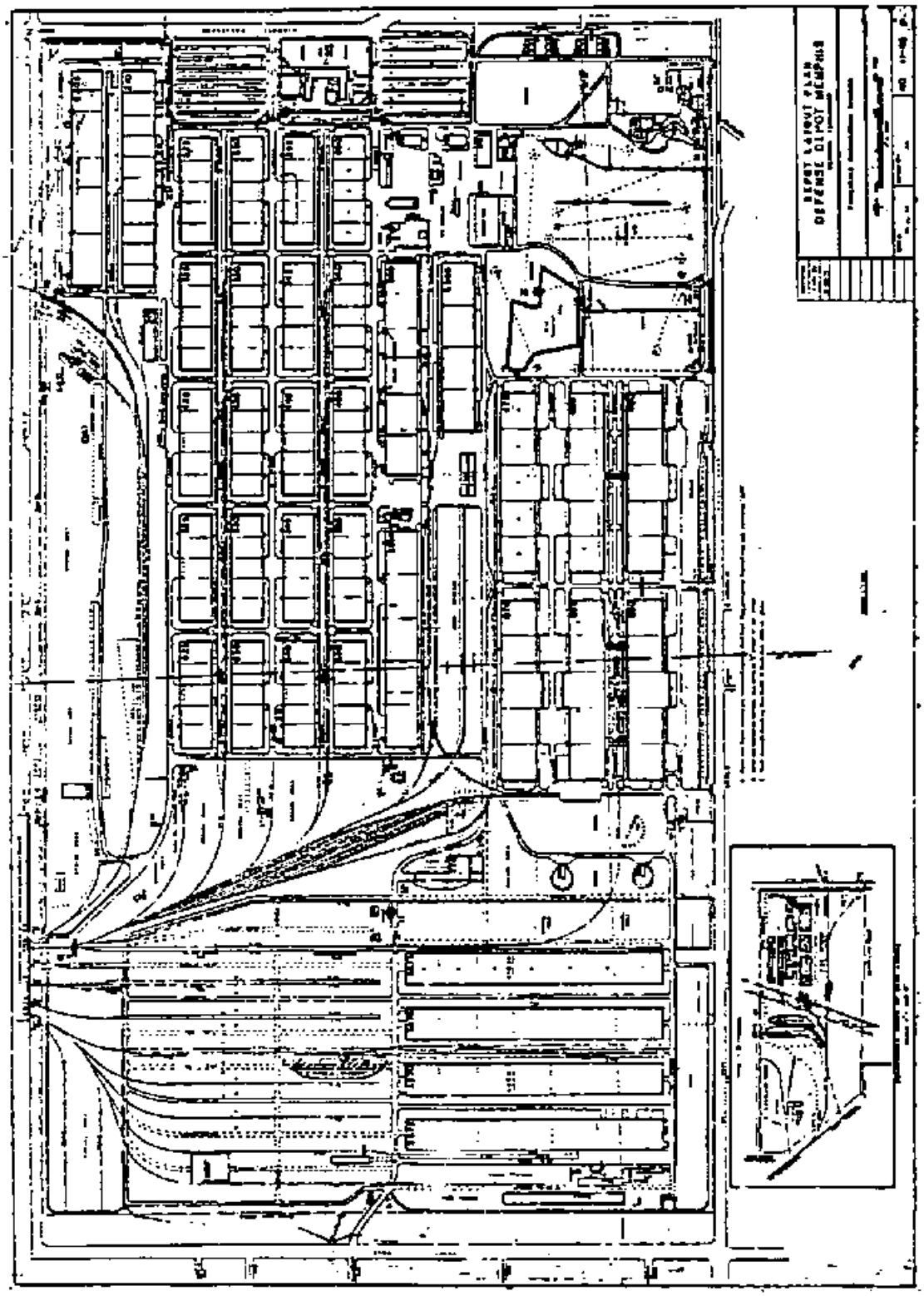

Figure 2. Installation Map of Defense Depot Memphis

assigned items and assembly of items and kits. In addition, this mission element provides transportation service and traffic management advice and guidance to the Commander and staff elements. Areas of particular interest during this survey included hazardous material storage (Bldgs 319, 629, 689, and 873, and areas X-13 and X-26), open shed storage (Bldgs S-972, S-970, S-875, and S-873), outside storage areas, the paint spray and sand-blasting operations, and the recoupment facility (Bldg 873, section S).

(2) Office of Installation Services. The Office of Installation Services directs the accomplishment of responsibilities related to activity operations and services encompassing environmental quality; energy conservation; facility management, including master planning; alterations and construction; common centralized administrative services; operating supplies; and equipment acquisition, utilization, maintenance, and nonappropriated fund activities. It also maintains a liaison with supported activities on requirements for installation support services. Areas of interest for the purpose of this audit included the print and photographic shops (Bldg 210), equipment maintenance areas (Bldgs 253 and 770), the FED shops, and the entomology shop (Bldg 737).

(3) DRMO. The DRMO, located in Bldgs 209, S308, and S309, has responsibilities which include:

- The minimizing of the need for abandonment or destruction of property by ensuring maximum DOD, GSA and Federal utilization of property through transfer to other Federal users and by the sale or donation of usable property to private concerns which service DOD and GSA screening.

- The recovery, when economically feasible, of precious metals from surplus items.

- The ultimate disposal (e.g., incineration, burial, or terminal storage at EPA-approved sites) of those items that were not or could not be reutilized or sold through placement with a private contractor.

(4) DIPEC. As a major field activity of the DLA, DIPEC manages the centralized inventory of industrial plant equipment owned by the DOD. Industrial plant equipment (IPE) are machine tools and other equipment used to develop, produce, test, and maintain weapons and supplies used in the nation's defense. The DIPEC facilities, located in Bldg 210, are primarily administrative and provide support to the three primary storage and maintenance activities located at Stockton, California, Columbus, Ohio, and Mechanicsburg, Pennsylvania.

5. FINDINGS AND DISCUSSION.

a. Management of the Environmental Program.

(1) At the specific request of DLA, certain administrative/management aspects of ODMT's environmental program were evaluated by interviewing the personnel primarily responsible for the implementation of the program, as well as management officials and line employees. Areas of

concern included the consistency of the implemented program; the relationship established between the environmental staff and the depot's workforce; the guidance afforded by the staff concerning environmental issues; and the timely dissemination of guidance, directives, and feedback both up and down the chain of command.

(2) At the present time, the responsibilities of establishing an overall environmental program at the DDMT are accomplished within the Facilities Engineering Division (FED). Due to the recent depot reorganization and past policies regarding the implementation of the environmental program, the DDMT does not have an environmental coordinator whose sole responsibilities lie in the areas of environmental concern. The program has been administered over the last several years by personnel ranging from the FED Chief to its current placement within the Engineering and Construction Office of the FED. Although several competent individuals are tasked with performing the day-to-day requirements of depot environmental issues, and a good rapport had been established between the FED and installation components, no one person has total responsibility for the development, implementation, and direction of a sound and thorough environmental program. Some of the problems which were directly or indirectly the result of this situation and evident during the time of the survey deserve mention.

(a) The administration of the environmental program by several different individuals of varying authoritative or management capacities results in the inconsistent implementation of environmental doctrine. In addition, such turnover has resulted in the loss of important environmental files and documents.

(b) The Directorate of Distribution, Office of Installation Services, and DRMO have well established and strong environmental staffs. However, these staffs required direction in the implementation of their environmental programs, lacked the training and certification courses which would make them more effective in their field, and needed a specific point of contact to answer everyday questions.

(c) Due to the lack of program planning and implementation, a relatively large amount of time was spent performing corrective actions after the fact and in crisis management situations.

(d) The current placement of the environmental program in the Engineering and Construction Office could lead to possible conflicts of interest between environmental requirements and installation development. Environmental issues should be dealt with by a separate and unbiased staff.

(e) Depot reorganization and environmental program personnel turnover has resulted in the neglect of specific environmental programs. In particular, this was evident during the time of the audit in the areas of hazardous material/hazardous waste management, solid waste, and air pollution.

b. Air Pollution Audit. The findings and discussion for the air pollution audit are presented in Appendix C.

c. Ground-water Audit. The findings and discussion for the ground-water audit are presented in Appendix D.

d. Hazardous Waste Audit. The findings and discussion for the hazardous waste audit are presented in Appendix E.

e. Solid Waste Audit. The findings and discussion for the solid waste audit are presented in Appendix F.

f. Water Quality Audit. The findings and discussion for the water quality audit are presented in Appendix G.

6. CONCLUSIONS.

a. Management of Environmental Program. At the present time, the responsibilities of establishing an overall environmental program at DDMT is accomplished within the FED. Due to the recent depot reorganization, and past policies regarding the implementation of the environmental program, the program appears to be severely fragmented. Although several competent individuals are tasked with performing the day-to-day requirements of depot environmental issues, no one person has total responsibility for the development, implementation, and direction of a sound and thorough environmental program. It has been evident throughout the performance of this environmental audit that an environmental coordinator must be established at the depot to provide a focal point for all environmental issues and concerns. This individual would be responsible for ensuring compliance with all Federal, State and local regulations, as well as establishing a program to identify existing or potential environmental hazards.

b. Air Pollution Audit.

(1) The State of Tennessee requires that owners of certain air contaminant sources apply for and obtain construction and/or operating permits in accordance with Chapter 1200-3-9 of the Tennessee Air Pollution Control Regulations. Records indicate that the current operating permits have expired, and that these permits need updating in order to accurately reflect current operating status. Proper construction permits were not obtained for the installation of the incinerator in Bldg 359 and the paint spray booth located in Bldg 1086.

(2) It is uncertain if adequate control is being imposed by DDMT to ensure that only items for which the type "O" incinerator in Bldg 359 is designed are disposed of in the unit.

(3) The fuel storage and dispensing facilities at DDMT were in compliance with Tennessee directives involving organic liquid storage and vapor recovery. However, an increase in the installation's throughput of gasoline will require that the vapors displaced from the storage tank during filling are processed by a vapor recovery system approved by the state.

(4) Current filter replacement procedures at the paint-spray booths in Bldgs 260 and 770 do not make effective use of installed pressure drop manometers.

(5) Major stock item primer and enamel spray painting operations conducted at Bldg 1087 possess the potential to violate State visible emissions standards

(6) Current abrasive blasting operations in Bldgs 1088 and S-1089, and the outside abrasive blasting site located at the corner of 25th and G Streets, have the potential to violate State visible emissions and fugitive dust standards.

(7) The installation has not sufficiently identified the locations of asbestos at DDMT. In addition, the depot has not developed a SOP relevant to asbestos removal and disposal, as well as personal protection during such operations which would ensure compliance with 40 CFR 61 and Chapter 1200-3-11 of the TAPCR.

c. Ground-water Audit.

(1) Ground water exists at the Dunn Field area of DDMT in the loessal material at a depth of 60 to 70 feet below the ground surface.

(2) Previous work by USATHAMA and USAEHA identified the Dunn Field burial sites, the PCP dip vat, and the spill accumulations in the old repackaging area at 21st and E Streets as sites for potential ground-water contamination.

(3) Six monitoring wells were installed and sampled by USAEHA during 21 June to 2 July 1982 and analytical results indicated no significant ground-water contamination although analyses for organic compounds were not performed.

(4) Additional potential ground-water contamination sites include the eighteen underground storage tanks which have not been leak-tested, the spill accumulations in the DRMO yard, and in the outdoor storage areas east and north of Bldg S873.

d. Hazardous Waste Audit.

(1) The written instructions attached to HM spill cleanup kits located in various HM storage buildings require revisions.

(2) The HM spill residues were improperly packaged prior to turn in to the DRMO for disposal.

(3) A HM spill in an open storage area adjacent to Bldg 873 has resulted in the generation of HW (i.e., contaminated soil) and the release of that HW into the environment.

(4) The DRMO disposed of all empty HM containers as HW; a practice that may be unnecessary.

(5) Drums containing unidentified wastes were stored in an open storage area near the DRMO storage yard.

(6) Some DDMT maintenance activities disposed of used solvents as HW.

(7) Drums containing potentially hazardous abrasive blasting residue have not been tested to determine how they should be disposed of.

(8) Hazardous wastes were occasionally stored for greater than 90 days in the DRMO HW storage building in violation of the State's HW regulations.

(9) Some HW's were stored incompatibly in the DRMO HW storage building.

(10) Building inspection logs for the DRMO HW storage building lacked some of the information required by the State's HW regulations.

(11) The DRMO has not complied with some of the State's personnel training and recordkeeping requirements for HW generators who store HW.

(12) The DDMT has neither developed nor implemented a comprehensive HW management program.

(13) Some provisions of the HSWA of 1984 have an immediate impact on DDMT while others will impact on DDMT soon.

e. Solid Waste Audit.

(1) Although the solid waste program is run through the FED, there is no central authority responsible for implementing the program. There is no written solid waste management plan or SOP addressing the program.

(2) Wastes generated at DDMT consists of rubbish, debris, cardboard, scrap wood, scrap metal, computer paper, computer cards, high-grade paper, a small amount of incinerator ash, and a minimal amount of garbage. Annual generation rate cannot be estimated because incorrect container volumes have been used in the recordkeeping system.

(3) All refuse and salvageable waste is stored in approximately 330 adequately maintained containers ranging in size from 24-gallon cans to 45-cubic yard compactors. Many containers are labeled for source separation of salvageable wastes.

(4) All wastes are collected and transported to the disposal sites in adequately functioning vehicles which are cleaned when necessary. Collections are made with regular frequency from the housing area and Bldgs 144, 210, and 558, and on an as-needed basis from all other areas. Although a good effort is being made to keep daily and monthly records, the use of incorrect container volumes invalidates the records.

(5) All refuse is transported 30 miles to the State-permitted Holmes Landfill which is operated by BFI Corporation for the City of Memphis. Compacted and uncompacted wastes are disposed there by DDMT.

(6) The Dunn Field area has been used intermittently since the early 1940's as a burial site for the disposal of specific items but not for the regular disposal of trash. The most recent use was for the burial of burnt airplane parts and women's uniforms destroyed in an airplane crash in August 1984.

(7) Defense Depot Memphis conducts recycling programs for cardboard, scrap metal, scrap wood, computer paper, computer cards, and high-grade paper. Contracts for all but the scrap wood are managed through DRMO. The scrap wood is dumped outside Gate 9 for public use.

f. Water Quality Audit.

(1) Potable/Recreational Waters.

(a) Potable water supplied to DDMT by MLGWD conforms to regulatory quality requirements and is provided in adequate amounts and at sufficient pressure.

(b) Bacteriological surveillance of potable water quality at DDMT is commendable.

(c) Disinfection of repaired depressurized small water main segments followed by bacteriological testing was not performed.

(d) Cross-connection control activities, while good, did not appear to be formalized.

(e) Swimming pool operation/maintenance practices were superb.

(2) Wastewater Related Issues.

(a) Discharge of wastewater to the City of Memphis sewerage system is in accordance with a current sewer use agreement.

(b) A current NPDES permit which governs surface water discharges is in effect. Required monitoring is performed under contract. Necessary reporting to the EPA is performed.

(c) The swimming pool filter washwater discharge may have to be regulated under the NPDES permit. If regulation is required, alternative connection to a nearby sanitary sewer may be possible.

(d) Some problems associated with the NPDES permit occurred but did not result in any noncompliance actions.

(3) Spill Prevention and Control Issues.

(a) The SPCCP is not current.

(b) Operational and maintenance-type practices in relation to spill prevention were lacking.

(c) Many spill events were not responded to prior to this audit.

(d) The Hazardous Materials Warehouse and Recoupment Facility will improve spill prevention and control.

(e) Updating and verification of the existing inventory of all underground storage tanks appears to be required.

(f) The hydrostatic testing program for all underground tanks has not been implemented.

(g) The ISCP is not up-to-date.

(h) Considerable spill response training appears to be provided.

7. RECOMMENDATIONS.

a. Management of the Environmental Program. Establish as a minimum a depot environmental coordinator whose sole responsibilities deal with the establishment and implementation of a consolidated depot environmental program.

b. Air Pollution Audit.

(1) Coordinate with the Memphis and Shelby County Health Department, and obtain and/or update installation air pollution permits. Ensure that proper air contaminant source construction permits are obtained prior to the installation of future air pollution sources (TAPCR 1200-3-9).

(2) Implement an incinerator inventory system to provide a written account of materials processed in the unit. In the event that the installation's environmental section is not present for incinerator burns, provide a copy of the items processed to the section so they may be kept on file at that office. (This recommendation is based on good environmental engineering practice.)

(3) In the event gasoline throughput at DDMT exceeds the exemption limit set in the TAPCR, contact the MSCHD to establish the necessity of installing a vapor recovery system for the gasoline tanks (TAPCR 1200-3-18-.10).

(4) Utilize the pressure-drop manometers installed on the paint spray booths in Bldgs 260 and 770 to develop a logical schedule of filter replacement. (This recommendation is based on good environmental engineering practice.)

(5) Expedite the scheduled construction of the dry filter-type paint spray booth in Bldg 1086 in order to replace current spray painting operations at Bldg 1087 to ensure compliance with State's visible emissions standards (TAPCR 1200-3-5).

(6) Ensure reasonable precautions are employed to provide adequate containment of abrasive material during abrasive blasting operations. Such precautions include closing the doors of Bldg 1088 while blasting, and the cessation of current outside abrasive blasting on the concrete pad located at the corner of 25th and G Streets (TAPCR 1200-3-5 and 1200-3-8).

(7) Implement a program to identify the location of asbestos insulation on the installation, and establish a SOP relevant to asbestos removal, disposal, and personal protection in accordance with Federal and State regulations (40 CFR 61 and TAPCR 1200-3-11).

c. Ground-water Audit. These recommendations are based on good geohydrologic practice.

(1) Sample the six ground-water monitoring wells at the Dunn Field area at least once for selected metals, nonmetal inorganics, and the organic priority pollutant compounds.

(2) Identify any leaking underground storage tanks and determine if the ground water quality has been affected.

(3) Remove any leaking containers from the outdoor storage areas in order to reduce the potential for ground water contamination.

d. Hazardous Waste Audit.

(1) Revise the written instructions for all HM spill cleanup kits located in the HM storage buildings. (This recommendation is based on good environmental engineering practice.)

(2) Properly package HM spill residues prior to turn-in to the DRMO for disposal [TR 1200-1-11-.03(4)(b)].

(3) Determine the quantity of HM that has spilled at the storage area adjacent to Bldg 873 and, if necessary, notify the National Response Center (40 CFR 302.4).

(4) Remove all soil which has been contaminated as the result of the HM spill near Bldg 873 and dispose of it as HW [TR 1200-1-11-.02(4)(d)4].

(5) Dispose as HW only those empty HM containers that do not satisfy the regulatory definition of "empty" [TR 1200-1-11-.02(1)(g)].

(6) Determine, by laboratory analyses, whether the unidentified wastes stored in drums near the DRMO storage yard are HW and dispose of them accordingly (TR 1200-1-11-.03).

(7) Recycle all used solvents generated at DDMT (USAEHA TG-136).

(8) Determine, by laboratory analyses, whether the abrasive blasting residue stored near area X-25 is a HW and dispose of it accordingly (TR 1200-1-11-.03).

(9) Ensure that HW's are stored for no longer than 90 days in the DRMO HW storage building [TR 1200-1-11-.03(4)(b)1].

(10) Ensure that all HW's stored in the DRMO HW storage building are stored compatibly [TR 1200-1-11-.05(9)].

(11) Include all information required by the State's HW regulations in the building inspection logs for the DRMO HW storage building [TR 1200-1-11-.05(2)(f)(4)].

(12) Ensure that the DRMO complies with all of the personnel training and recordkeeping requirements for HW generators who store HW [TR 1200-1-11-.05(2)(g)].

(13) Develop and implement a comprehensive HW Management Program which includes the components described in the USAEHA Technical Guide Number 136. (This recommendation is based on good environmental engineering practice.)

(14) Develop, as part of the HW management program, a written HW management plan (DOD 4160.21-M).

(15) Ensure that DDMT complies with all of the applicable provisions of the HSWA of 1984 (Public Law 94-580).

e. Solid Waste Audit. These recommendations are based on good environmental management practices.

(1) Establish responsibility for the solid waste management program under an environmental coordinator who would function as the central authority for implementing the program, develop SOP's, and provide guidance to the refuse collection staff.

(2) Develop a written solid waste management plan, and document procedures for inspection, cleaning, collection, disposal, and recordkeeping in a SOP.

(3) Take only compacted refuse to the Holmes Landfill.

(4) Modify the present recordkeeping system to accurately account for the volumes of all wastes disposed, particularly refuse.

(5) Continue recycling those wastes which are recyclable.

f. Water Quality Audit.

(1) Follow proper disinfection procedures, including bacteriological testing, for all repaired depressurized small water main segments. (This recommendation is based upon good environmental engineering practice.)

(2) Ensure existence of a formal cross-connection control program. (This recommendation is based upon good environmental engineering practice.)

(3) Contact US Environmental Protection Agency (EPA) Region IV to determine if the swimming pool filter washwater discharge requires regulation under the NPDES permit (40 CFR 122).

(4) Amend/update the SPCCP (40 CFR 112).

(5) Improve operational and maintenance-type practices at potential spill sites (40 CFR 112).

(6) Provide timely effective response to all spill incidents (40 CFR 300).

(7) Pursue the Hazardous Materials Warehouse and Recoupment Facility MILCON projects ASAP (40 CFR 112).

(8) Update/verify the existing inventory of all underground storage tanks (Public Law 98-616).

(9) Institute the program for hydrostatic testing of all underground tanks (40 CFR 112).

(10) Amend/update the ISCP (40 CFR 300).

(11) Continue to ensure spill response training is provided, especially, to all new involved personnel (40 CFR 300).

8. TECHNICAL ASSISTANCE. Requests for services should be directed through appropriate command channels of the requesting activity to the Commander, US Army Environmental Hygiene Agency, ATTN: HSHB-E, Aberdeen Proving Ground, MD 21010-5422, with an information copy furnished the Commander, US Army Health Services Command, ATTN: HSCL-P, Fort Sam Houston, TX 78234-6000. Technical advice and/or assistance regarding this report may be obtained from the respective division chief: Chief, Water Quality Engineering Division - Autovon 584-3816/3289; Chief, Air Pollution Engineering Division - Autovon 584-3500; Chief, Waste Disposal Engineering Division - Autovon 584-2024.

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APPENDIX A

ABBREVIATIONS AND DEFINITIONS

AFM	Air Force Manual
API	American Petroleum Institute
AOSC	assistant on-scene coordinator
AQCR	Air Quality Control Region
ASAP	as soon as possible
ashes	residue from burned wood, coal, coke and other combustible materials
AWWA	American Water Works Association
bbls	barrels, unit volume, 1 barrel = 45 US gallons
Bldg	building
° C	degrees Celcius
$CaCO_3$	calcium carbonate
cap	capacity
CFR	Code of Federal Regulations
corrosivity	the characteristic of a waste whereby the waste is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, or can corrode steel at a rate greater than 0.250 inch per year (40 CFR 261.22)
Cretaceous	the third and latest of the geologic periods included in the Mesozoic era
cu yd	cubic yard
cu yd/wk	cubic yards per week
DA	Department of the Army
DDMT	Defense Depot Memphis, Tennessee
debris	grass cuttings, tree trimmings, stumps, street sweepings, roofing and construction wastes, and similar waste material resulting from maintenance and repair work

disposal	the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or onto water or land so that such waste or any constituent thereof may enter into the environment or be emitted into the air or discharged into any waters, including ground waters
DLA	Defense Logistics Agency
DMP	discharge monitoring point
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DOPH	Tennessee Department of Public Health
DPDO	Defense Property Disposal Office
DSAR	Defense Supply Agency Regulation
Embayment	describes continental border area that has sagged concurrently with deposition so that an unusually thick section of sediment results
EP Toxicity	the characteristic of a waste that is capable of causing death or severe temporary or permanent damage of an organism by the concentration of a contaminant (listed in Table I of 40 CFR 261.24) from the extract of a sample waste
EPA	US Environmental Protection Agency
expiration date	the manufacturer's suggested calendar date after which a material or product should not be used for the original intended purpose
° F	degrees Fahrenheit
FED	Facilities Engineering Division
FSII	fuel system ice inhibitor
FY	fiscal year
garbage	animal and vegetable waste and containers resulting from the handling, preparation, cooking, and consumption of foods
gpd	gallons per day

GSA	General Services Administration
hazardous material	a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated
hazardous waste	a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: (1) cause, or significantly contribute to, any increase in mortality or an increase in serious irreversible or incapacitating reversible illness (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed
HM	hazardous material(s)
HSWA	Hazardous and Solid Waste Amendments of 1984 (Public Law 98-616)
HW	hazardous waste(s)
IAW	in accordance with
ignitability	a characteristic of solid waste whereby the waste is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and presents a hazard when ignited (40 CFR 261.21)
infectious waste	a waste capable of producing infection; pertaining to or characterized by the presence of pathogens. Infectious wastes include isolation wastes, cultures and stocks of etiologic agents, blood and blood products, pathological wastes, other wastes from surgery and autopsy, contaminated laboratory wastes, sharps (such as hypodermic needles, syringes, pipettes, broken glass, and scalpel blades), dialysis unit wastes, animal carcasses and body parts, animal bedding and other wastes from animal rooms, discarded biologicals, and contaminated equipment
ISCP	Installation Spill Contingency Plan

loess	a homogenous, non-stratified, unindurated deposit consisting of silt, with subordinate amounts of very fine sand and/or clay
LPG	liquified petroleum gasoline
m	meter
MBtu/hr	million British thermal units per hour
MGD	million gallons per day
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MHE	material handling equipment
MILCON	Military Construction
MLGWD	Memphis, Light, Gas and Water Division
MOGAS	motor gasoline
mph	miles per hour
MSCCCB	Memphis and Shelby County Cross Connection Board
MSCHD	Memphis and Shelby County Health Department
N	nitrogen
NAAQS	National Ambient Air Quality Standards
NIPDWR	National Interim Primary Drinking Water Regulations
NPDES	National Pollutant Discharge Elimination System
NSDWR	National Secondary Drinking Water Regulations
NTV	Nephelometric Turbidity Units
O_3	ozone
OIS	Office of Installation Services
OPPOM	Oil Pollution Prevention Operation Manual
OSC	on-scene coordinator

OSHA	Occupational Safety and Health Administration
Paleozoic	one of the eras of geologic time, that between the Precambrian and Mesozoic, comprised of the Cambrian, Orodvician, Silurian, Devonian, Mississippian, Pennsylvanian and Permian periods
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
pH	measurement of the acidity and basicity of an aqueous solution ranging from 0-14 standard units
PL	public law
POL	petroleum, oils, and lubricants
PO_4	phosphate
ppb	parts per billion
ppm	parts per million
psia	pounds per square inch absolute
Quaternary	the younger of the two geologic periods of the Cenozoic era. Comprises all time from Tertiary to present, including Recent and Pleistocene deposits, 3 million years ago to present
° R	degrees Rankine
RCRA	Resource Conservation and Recovery Act
Recent	time and strata younger than the Pleistocene
refuse	solid waste materials composed of garbage, ashes, debris, rubbish and other commercial and domestic materials
rubbish	consists of a variety of waste materials such as metal, glass, crockery, floor sweepings, paper, wrappings, containers, cartons, and similar articles not used in preparing or dispensing foods
solid waste	all refuse materials other than gaseous and liquid wastes
SOP	standing operating procedure

SPCCP	Spill Prevention Control and Countermeasure Plan
TAPCR	Tennessee Air Pollution Control Regulation(s)
Tertiary	the earlier of the two geologic periods included in the Cenozoic era
TLV®	Threshold limit value. The maximum airborne concentration of a substance to which the ACGIH believes that nearly all workers may be repeatedly exposed day after day without adverse effects and which is published in the 1984 edition of the ACGIH Handbook.
TM	technical manual
TON	threshold odor number
TR	Tennessee Rule (Tennessee Hazardous Waste Management Rule)
TSDF	treatment, storage, and disposal facility
TSP	total suspended particulate
TSS	total suspended solids
TTHM	total trihalomethanes
TTHMFP	TTHM formation potential
T/yr	short tons per year
UG	underground
USAEHA	US Army Environmental Hygiene Agency
USAF	US Air Force
USATHAMA	US Army Toxic and Hazardous Materials Agency
VOC	volatile organic compound

® TLV established by the American Conference of Governmental Industrial Hygienists (ACGIH), Cincinnati, Ohio.

APPENDIX B

PERSONNEL CONTACTED

Commander

COL Corlyn J. Troyer, USAF, Installation Commander
COL James A. Simmons, USAF, Acting Deputy Commander

Commander's Personal Staff

Mr. Curt Guenther, Public Affairs Officer
Mr. Charles W. Crouch, Chief, Safety and Health Office
Mr. John Tibbels, Industrial Hygienist, Safety and Health Office
Mr. David C. Luscavage, Industrial Hygienist, Safety and Health Office

Directorate of Distribution

Mr. M. J. Augenstein, Director of Distribution
LTC W. H. Whitley, USA, Deputy Director
Mr. Thomas W. Ricks, Chief, Distribution Management Division
Ms. Linda Sullivan, Distribution Management Division
Mr. Harry Hartwig, Physical Science Technician
Mr. Bobby Dean, Warehousing Division II
Mr. Ski Biniakewitz, Painter Work Leader, Operations Branch, Transportation and Shipping Division

Office of Comptroller

Mr. Charles J. Lord, Comptroller
Ms. Valerie Bacon, Chief, Review and Analysis Function
Ms. Betty Carrington, Program Analyst, Review and Analysis Function
Mr. Alvin Asbridge, Industrial Engineering Technician, Systems Engineering Function

Office of Installation Services

LTC John W. Krosnes, USAF, Director of Installation Services
Mr. Ulysses Truitt, Deputy Director
MAJ Douglas R. Lamothe, USA, Chief, FED
Mr. William Moore, Chief, Engineering and Construction Office, FED
Mr. Harry Craig, Physical Science Technician, Engineering and Construction Office, FED
Ms. Gail Smith, Real Property Officer, FED
Ms. Margaret Katsiras, Real Property Officer, FED
Mr. Thomas Bumpas, Chief, Operations and Maintenance Branch, FED
Mr. Charles Dunaway, Chief, Roads, Railroads, Grounds, Entomology and Refuse Sections
Mr. Jewel Edwards, Entomologist Supervisor, FED
Mr. Charles Barber, Entomology Shop Leader, FED

Mr. Charles E. Anderson, Chief, Operating Equipment Division
Mr. Johnny Carson, Supervisor, Mechanical and Plumbing Shop, Operations and Maintenance Branch, FED
Mr. Tommy Martin, Service Station Foreman, Operating Equipment Division
Mr. Austin Hodges, General Foreman, Equipment Maintenance Branch, Operating Equipment Division
Mrs. Mary Mayes, Printing Officer, Printing and Reproduction Function
Mr. Willie Jones, Photographer, Printing and Reproduction Function
Mr. James Gayhart, Pipefitter, Mechanical and Plumbing Shop, Operations and Maintenance Branch, FED
Mr. Sevon Alverado, Industrial Mechanic, Mechanical and Plumbing Shop, Operations and Maintenance Branch, FED
Mr. S. W. Mottern, Equipment Mechanic, Mechanical and Plumbing Shop, Operations and Maintenance Branch, FED
Ms. Jan Davis, Lifeguard

Tenant Activities

Mr. Robert T. Mangrum, Defense Reutilization and Marketing Office (DRMO)
Mr. Edwin L. Prince, Deputy, Defense Industrial Plant Equipment Center (DIPEC)
SSG William Snodgrass, USA, Environmental Health NCO, DDMT Health Clinic

State of Tennessee

Mr. James H. Haynes, P.E., Director, Division of Water Supply, Tennessee Department of Health and Environment
Mr. Steve Warren, Cross Connection Board Representative, Shelby County, Tennessee
Mr. Norman Chapel, Supervisor, Water Operations Department, MLGWD
Mr. James Webb, Water Quality Control Analyst, Water Laboratory Department MLGWD
Mr. Jerry R. Collings, P.E., Administrator of Wastewater Treatment, City of Memphis

APPENDIX C

AIR POLLUTION AUDIT

1. REFERENCES. See Annex C-1.

2. GENERAL.

a. Regulatory Authority Requirements. In accordance with DSAR 1000.17, DLA facilities must conform to Federal, State, and local air quality standards and emission limitations in concurrence with the 1977 Clean Air Act Amendments (PL 95-95). These standards cover the areas of fugitive emissions; sulfur content of heating fuels; handling and storage of volatile petroleum, distillate, or organic liquids; and waste incineration. They are intended to apply when state and local standards are less stringent. Due to the varying degrees of state enforcement, it is the responsibility of the local DLA commander to inventory sources of air pollution under his command and determine compliance with applicable state or territorial standards.

b. State Regulatory Authority. The Tennessee Department of Health and Environment has been given the authority by the Tennessee Air Quality Act to adopt, amend and repeal regulations for the control and abatement of air pollution throughout the State or in affected areas of the State. The State of Tennessee, therefore, has primacy concerning the implementation and enforcement of air pollution regulations. The MSCHD is the administrating authority for the Memphis area.

c. AQCR. The DDMT is situated in the Metropolitan Memphis Interstate AQCR (40 CFR 81.44). That portion of the AQCR which contains DDMT has been designated by the EPA as "Better than National Ambient Air Quality Standards (NAAQS)" for TSP and sulfur dioxide, and "Does not meet primary NAAQS" for carbon monoxide, nitrogen dioxide, and ozone.

3. FINDINGS AND DISCUSSION.

a. Maintenance of Air Pollutant Emissions Inventory.

(1) Federal Emissions Inventory. The EPA Air Pollutant Emissions Report (OMB Form 158-R75), originally compiled in 1975-76, could not be found at DDMT during the time of this audit. However, the results of this audit, in addition to the information filed with the MSCHD, can be used to supplement the report.

(2) State Emissions Inventory. The MSCHD has requested that DDMT file an emissions inventory with the office, and to provide an annual update on the installation of new sources or substantial modification of the existing sources. It appears, due to the absence of construction or operating permits for the newly installed incinerator at Bldg 359 or the paint spray booth located in Bldg 1086, that the inventory has not been updated in quite some time. Although the MSCHD has not specifically

contacted DDMT to update the inventory, it is essential that the installation take the initiative to make the necessary corrections when they occur. Not only does this provide the installation with an accurate inventory of facility sources and can help identify air pollution problem sources, it establishes a professional and friendly rapport between the installation and the Department.

b. Stationary Source Compliance.

(1) Indirect Heating Fuel Burning Sources. The State of Tennessee regulates visible, particulate, and sulfur dioxide emissions from fuel burning sources under TAPCR 1200-3-5, 1200-3-6, and 1200-3-14, respectively. The State limits visible emissions to less than 20 percent opacity, except for excursions not to exceed a total of 5 minutes in any 1 hour or more than 20 minutes in any 24-hour period. The maximum allowable hourly particulate emissions for a fuel-burning installation of less than 10 MBtu/hr commencing operation before 3 April 1972 is 0.600 pounds of particulate matter per million Btu input. The DDMT operates 17 major boilers at 12 separate facilities ranging in size from 0.47 to 8.39 MBtu/hr. The DDMT major heating plant information is provided as Appendix C-2. The units utilize natural gas as a primary fuel, with the boiler at Bldg 770 having a cofiring capability of burning No. 2 fuel oil. Natural gas usage was 94,113,482 ft^3 for FY 84. The two atmospherically-fired Spencer boilers at Bldg 359 no longer have No. 6 fuel oil cofiring capability, but the burners and concrete bunkers for fuel oil have not been removed. At the time of this survey, the boilers at DDMT were in compliance with opacity, particulate and sulfur dioxide emission limitations. The MSCHD requires construction and operating permits for fuel burning equipment of 500,000 Btu/hr capacity or greater as specified by TAPCR 1200-3-9. Permits are also required for modifications of existing units. The DDMT, therefore, is required to obtain operating permits for these boilers. At the time of this survey, DDMT had procured fifteen air pollution permits which were effective 12 June 1981. These permits, which usually come up for renewal every 2 years, had been extended by the MSCHD until 12 January 1985. At this time the permits expired. It is necessary for the installation to update the existing permits and to reapply and procure the necessary operating permits for the boilers. In addition, the DDMT must ensure that MSCHD is contacted upon the construction or modification of any air contaminant source in order to procure the necessary permits.

(2) Incineration. The DDMT operates an incinerator in Bldg 359 (section 2) primarily for the destruction of classified waste. It replaced an existing unit located in Bldg 144. The incinerator is a natural gas-fired, multiple chambered unit rated for 250 lbs/hr of Type "0" waste. The packaged controlled-air incinerator has a primary chamber to initiate the combustion of charged material, and a secondary chamber which, by providing additional retention time at an elevated temperature, leads to a more thorough destruction of waste. A burner rated at 400,000 Btu/hr maximum input capacity was provided in each chamber. At the time of this survey, the unit had been used to destroy classified documents generated at DDMT and some medical items. The medical items which are incinerated are

not hazardous by nature and cannot include syringes or infectious waste. Their processing through the incinerator was necessitated by the nonacceptability of such items by DRMO. It is essential that adequate control over who uses the incinerator and the items which are destroyed is provided. This will ensure that only items which the incinerator is designed for are burned and that the materials which may be classified as hazardous wastes are not. The establishment of a strict inventory system to document the processed materials will help to ensure this. The incinerator, although not observed in operation during this survey, appeared to be in compliance with visible emissions (TAPCR 1200-3-5), particulate emissions (TAPCR 1200-3-6), and sulfur dioxide (TAPCR 1200-3-14). However, the DDMT failed to obtain proper construction or operating permits for the units as required by TAPCR 1200-3-9.

(3) Open Burning. Chapter 1200-3-4 of the TAPCR does not allow open burning in the State of Tennessee except in certain circumstances to include fires set up or at the direction of responsible fire control agencies for the prevention, elimination, or reduction of a fire hazard. Since the DDMT does not have its own fire department on the installation, and is provided fire protection services by the city of Memphis, it has no requirement for firefighting training. The installation does not conduct open burning operations for the purposes of land or brush clearing.

(4) Petroleum Liquid Storage. A summary of the number and size of the major fuel storage tanks at DDMT is presented in Annex C-3. The TAPCR 1200-3-18-.07 governs the storage of volatile petroleum liquids in vessels with capacities greater than 42,000 gallons whose true vapor is greater than 1.52 psia. Since the installation's petroleum storage tanks are either less than 4,200 gallons in capacity or have a true vapor pressure less than 1.52 psia, they are exempted from regulation. These tanks are also exempted from permit requirements because they are less than 40,000 gallons in capacity and were installed prior to the effective date of TAPCR 1200-3-9-.02.

(5) Gasoline Service Stations.

(a) The DDMT operates an installation service station with three refueling pumps and one submerged fill pump which dispenses unleaded gasoline to government vehicles and the gasoline-powered MHE at Bldg 257. In addition, a 500-gallon tank truck is utilized by the installation to refuel some forklifts onsite. Unleaded gasoline, LPG, and diesel fuel consumption for FY 84 is provided in Table 1.

TABLE 1. DDMT FY 84 UNLEADED GASOLINE, LPG AND DIESEL FUEL CONSUMPTION

Fuel	Gallons
Unleaded Gasoline	243,496
LPG	46,450
Diesel	18,695

(b) TAPCR 1200-3-18-.10 requires that unless otherwise exempted, facilities with stationary gasoline storage containers of greater than 2,000 gallons and with an annual gasoline throughput of 260,000 gallons or greater must be equipped with a submerged fill pipe, and the vapors displaced from the storage tank during filling are to be processed by a vapor control system approved by the state. At the time of the survey, the gasoline storage tanks had submerged fill capability, and were exempted from vapor control due to throughput. If DDMT increases its gasoline throughput in the future, it will be required to comply with the vapor control provisions of TAPCR 1200-3-18-.10. The State of Tennessee requires the installation to apply for construction and operating permits for the installation of new gasoline storage tanks which have capacities greater than 10,000 gallons (TAPCR 1200-3-9-.04). The DDMT never applied for or received construction or operating permits for the new 18,000-gallon and 20,000-gallon underground storage tanks installed in the Spring of 1985. The gasoline storage tanks at buildings 253, 754, and 770 are unaffected by Tennessee regulations due to their size and use.

(6) Metal Cleaning and Degreasing Operations. The DDMT conducts small-scale cold-cleaning operations in buildings 253,469, 490 and 770. These cold-cleaning parts tanks, which are 10-20 gallons in capacity, utilized Stoddard-type solvent as a cleaning medium. The units are maintained by contract, and comply with all provisions in TAPCR 1200-3-18-.18 which requires that the cleaning solvent is not allowed to evaporate when the unit is not in use, that waste solvent is stored in such a way as to not allow evaporation, and that the solvent cleaner provides a solid fluid stream for rinsing parts. Some tanks incorporate a fusible link system into the cover to automatically close the degreaser in the event of a fire. The units do not require air pollution permits of any type.

(7) Painting Operations. Spray painting operations are conducted at three sites of the installation. Building 770 houses a large walk-in dry filter-type spray paint booth, which is used primarily for enamel touch-up and repair of MHE. Filtered panels on the far end of the booth allow for the introduction of makeup air. Paint overspray is carried to the front end of the booth and removed by a paper filter system. Filter replacement was accomplished on an as-needed basis instead of utilizing a pressure-drop manometer installed on the outside of the booth. Used filters were disposed of at the sanitary landfill. Major stock primer and enamel spray-painting operations are conducted in Bldg 1087. The building contains an inactive drive-through water cascade paint spraying booth and a drying oven. Due to the inoperability of the collection system, spray painting is routinely performed with the building doors open or outside on a concrete pad. It was apparent upon observation of building operations on 15 July 1985, that such spray painting has the potential to violate both visible emissions (TAPCR 1200-3-5) and fugitive emissions (TAPCR 1200-3-8) limitations. The DDMT is in the process of installing a new dry filter-paint spray booth in Bldg 1086 which will replace current operations at

Bldg 1087. At the time of this survey, DDMT had not procured a proper construction permit or waiver, and had not applied for an operating permit in accordance with TAPCR 1200-3-9. A dry-filter paint spray facility for enamel application was housed at Bldg 260. The facility was a room at the Paint and Sign Shop (FED). The pressure-drop manometer needed a set point to establish when filter replacement should be performed. All booths located at DDMT appear exempt from paint solvent limitations as prescribed in TAPCR 1200-3-18.21 which exempts facilities having potential emissions less than 25 tons per year in urban counties.

(8) Abrasive/Sand-blasting Operations. Abrasive blasting operations are conducted at three sites on the installation. The blasting material utilized at all three sites consists of a fine grit material comprised of silicon, iron, and aluminum oxides, tradename Black Beauty. Abrasive blasting of medium-sized stock items is conducted in Bldg 1088 to remove rust and scale. The booth was equipped with a baghouse and mechanical shaker which collected and removed the lighter fraction of material consisting of rust, paint and pulverized abrasive blasting material. The material collected in the baghouse was discharged into 55-gallon drums. Some fugitive emissions evolved during this discharge operation. However, a much larger discharge of material was observed during normal operation of the booth (blasting with both booth doors open). Abrasive material was observed at a distance of approximately 150 feet north of Bldg 1088, and 75 feet south. The facility is located approximately 150 feet from the west boundary fence. Operators at the facility contended that the booth has to be operated with the doors open because of poor lighting inside the booth, and because the pneumatic doors on the north side of the building could not be operated to bring materials in and out without first going out the south side and all the way around the building to actuate the door controls. Large stock items which could not be blasted in Bldg 1088 were either blasted at the northwest corner of Bldg S1089 or on an open concrete pad near the intersection of 25th and G Streets. Building S1089 is an open storage building and a small abrasive blasting unit was used to remove rust and scale from metal items. Abrasive material was found west of Bldg S1089, and approximately 25 feet from the boundary fence. It appears likely, due to the amount of material observed west of the building, that a door at the northwest corner of the shed was open during blasting operations. Outside abrasive blasting is conducted on a 40-foot by 200-foot concrete pad with a portable abrasive blasting unit. All three abrasive blasting operations have the potential to violate State visible emissions and fugitive dust standards. The DDMT must ensure that reasonable precautions be employed in order to provide adequate containment of abrasive blasting material. In addition, such containment will prevent blasting material at Bldg 1088 from contaminating spray-painting operations in the booth at Bldg 1086 when it commences operation.

(9) Woodworking Operations. Woodworking operations are conducted at two installation facilities, Bldgs 265 and S972. Building 265, which also houses the sheet metal and welding shops, is equipped with a dry

cyclone collection system which entraps sawdust from band, table, planer, joiner and radial arm saws. The cyclone, which was located outside the building, discharged directly through a chute into a dumpster. The dumpster was emptied approximately once a month. Building S-972 houses another woodworking activity, which is used primarily for pallet work and container fabrication, also employs a dry cyclone system for sawdust removal. Both facilities were in compliance with the State directives of visible emissions (1200-3-5) and particulate emissions (1200-3-7). Neither of the units require permits due to their dates of installation.

(10) Vehicle Maintenance and Repair Operations. The ODMT, because of its storage and distribution mission, must maintain large numbers of MHE (forklifts and tractors) and transport vehicles. The installation performs a majority of its vehicle maintenance and repair at Bldgs 253 and 770. Building 253 houses the installation motor pool where minor maintenance, such as fluid changes, steam cleaning, washing, and lubrication is performed on installation vehicles. The vehicle exhaust collection system was no longer used. Major maintenance and repair of installation vehicles and MHE is performed in Bldg 770. The vehicle exhaust collection system, located beneath the shop floor had approximately twelve hookup stations and appeared to function adequately.

(11) Hazardous Air Contaminants. The State of Tennessee regulates the emission of asbestos, beryllium, mercury, and vinyl chloride as hazardous air contaminants under TAPCR 1200-3-11. The installation occasionally removes and disposes of asbestos items. There are rather stringent regulations imposed by the State of Tennessee concerning the handling of asbestos articles, including reporting, removal techniques and wetting, and disposal procedures. At the time of this survey, asbestos identification and removal was performed on a case-by-case basis. In at least one instance, asbestos was not removed in accordance with TAPCR 1200-3-11 and 40 CFR 61 due to the fact that it was unclear at the time of removal that the boilers and steamlines in Bldg 210 contained asbestos material. An installation wide inspection to identify insulating material containing friable asbestos and an installation SOP which would dictate what steps have to be taken upon the removal of asbestos containing material will ensure continued compliance with State and OSHA directives. No significant sources of beryllium, mercury, or vinyl chloride are located at ODMT.

(12) Fugitive Dust. The State of Tennessee has established guidelines for the control of fugitive dust. Chapter 1200-3-8 of the TAPCR requires that fugitive dust cannot be emitted in such a manner to exceed 5 minutes per hour or 20 minutes a day as to produce a visible emission beyond the property of the property line on which the emission originates, excluding malfunction of equipment. In addition, both Tennessee and the MSCHD require that reasonable precautions be employed to provide adequate containment of fugitive emissions. The main source of fugitive emissions at ODMT are the abrasive blasting operations [see paragraph 4b(8), above]. The cessation of outside abrasive blasting (corner of 25th and G Streets),

and conducting abrasive blasting operations within the closed confines of Bldgs 1088 and S1089, will ensure compliance with State and County directives.

c. Mobile Source Compliance.

(1) Motor Vehicles. The State of Tennessee places no restrictions on the emission of visible or gaseous air pollutants from mobile sources. In addition, TAPCR 1200-3-9-.04 exempts mobile sources from permitting requirements with the Tennessee Department of Health and Environment.

(2) Transportation Control Plan. Installations located within an area defined in EPA-approved transportation control plans are required by AR 200-1 to cooperate with local authorities in reducing vehicular traffic consistent with military requirements. At present, the State of Tennessee places no restrictions on vehicular traffic in the DDMT area. However, AR 210-4 states that where practical, all installations and activities will establish carpooling programs as well as control employee parking spaces. The regulation provides that carpool vehicles will receive priority over sole-occupant vehicles in the assignment of desirable and convenient parking spaces.

(3) Installation Traffic. Approximately 3,000 privately-owned vehicles and 400-500 government-owned vehicles, including MHE are operated by employees at the DDMT. No significant impact on air quality due to vehicular traffic is expected.

(4) Other Mobile Sources. The DDMT owns and operates two diesel-powered locomotives for transporting goods and supplies over DDMT's 26 miles of railroad track. In FY 84, 393 railcars were loaded and 127 were unloaded. In addition to locomotive transport, DDMT shipped and received a large volume of supplies by truck. In FY 84, 14,509 trucks were loaded and 16,691 were unloaded. A total of 74 tank trucks, carrying gasoline, diesel fuel, and propane were unloaded at DDMT. The impact of these sources of air quality is expected to be negligible.

d. Air Quality Standards. Federal and State ambient air quality standards are contained in Annex C-4.

e. Emergency Episode Plan. Chapter 1200-3-15 of the TAPCR requires that major sources, in or significantly impacting a nonattainment area, submit to the state an acceptable air pollution episode emissions reduction plan to be followed during the alert, warning, and emergency levels of an air pollution episode. A major source is defined as a stationary source which emits, or has the potential to emit, 100 tons of a pollutant per year for which the area has been designated as nonattainment of NAAQS. In addition, sources with the potential to emit 250 tons per year of more of any pollutant must submit an episode plan. Since DDMT does not have any sources of carbon monoxide, nitrogen dioxide, or ozone which are in excess of these established limits, it is not required to submit such a plan to the Memphis and Shelby County Health Department.

ANNEX C-1

REFERENCES

1. DLAR 1000.17, 1 July 1977, Protection and Enhancement of Environmental Quality.

2. Public Law (PL) 95-95, 7 August 1977, Clean Air Act Amendments of 1977.

3. Title 29, Code of Federal Regulations (CFR), 1985 rev, Part 1910, Occupational Safety and Health Standards.

4. Title 40, CFR, 1984 rev, Part 50, National Primary and Secondary Ambient Air Quality Standards.

5. Title 40, CFR, 1984 rev, Part 51, Requirements for Preparation, Adoption, and Submittal of Implementation Plans.

6. Title 40, CFR, 1984 rev, Part 61, National Emission Standards for Hazardous Air Pollutants.

7. Title 40, CFR, 1984 rev, Part 81, Designation of Areas for Air Quality Planning Purposes.

8. Title 40, CFR, 1984 rev, Part 86, Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines: Certification and Test Procedures.

9. Compilation of Air Pollutant Emission Factors, 3d ed, EPA No. AP-42, with supplements 1 through 14, May 1983.

10. Rules of the Tennessee Department of Public Health, Division of Air Pollution Control, Chapters 1200-3-1 through 1200-3-20, as amended, 2 March 1983.

11. Letter, USAEHA, HSE-EA-A/WP, 17 October 1977, subject: EIA Consultation Visit No. 21-1443-78, Defense Depot Memphis, Memphis, TN, 29-31 August 1977.

12. Installation Assessment of Defense Depot Memphis, Memphis, Tennessee, USATHAMA Report No. 191, July 1982.

ANNEX C-2

DEFENSE DEPOT MEMPHIS HEATING PLANT INFORMATION

Location Bldg No.	Fuel	Boiler Manufacturer (Installation Date)	Burner Manufacturer (Installation Date)	No. of Units Per Boiler	Maximum Heat Input Capacity (MBtu/hr) Each	Total
144	Nat. Gas	Pacific (1942)	Webster (1981)	2	1.40	2.80
210	Nat. Gas	Cleaver Brooks (1982)	Cleaver Brooks (1982)	2	2.50	5.00
229	Nat. Gas	Pacific (1942)	Auburn (1950)	2	6.95	13.90
253	Nat. Gas/No. 2 Fuel Oil	Kewanee (1952)	Peabody Gordon-Platt (1981)	1	1.85	1.85
265	Nat. Gas	Kewanee (1942)	Webster (1984)	1	2.00	2.00
359	Nat. Gas	Spencer (1942)	Spencer (1942)	2	8.39	16.78
470	Nat. Gas	National (1954)	National (1954)	1	0.47	0.47
489	Nat. Gas	National (1954)	National (1954)	1	0.47	0.47
670	Nat. Gas	National (1953)	National (1953)	1	0.47	0.47
689	Nat. Gas	National (1953)	National (1953)	1	0.47	0.47
690	Nat. Gas	National (1953)	National (1953)	1	0.47	0.47
770	Nat. Gas/No. 2 Fuel Oil	Kewanee (1952)	Peabody Gordon-Platt (1981)	2	3.00	6.00

ANNEX C-3

INVENTORY OF UNDERGROUND FUEL STORAGE TANKS

Location Bldg No.	Capacity (gal)	Fuel	Year Tank Installed	Use
209	12,000	No. 6 Fuel Oil	1942	Out of Service
253	5,000	No. 2 Fuel Oil	1963	Heating Fuel
253	1,100	Gasoline	1944	Weekend Vehicle Refueling
257	2,500	Gasoline	1985	Transfer Subtank
257	18,000	Gasoline	1985	Vehicle Refueling
257	20,000	Gasoline	1985	Vehicle Refueling
319	4,000	No. 2 Fuel Oil	1979	Heating Fuel
359	12,000	No. 2 Fuel Oil	1942	Out of Service
359	880	No. 2 Fuel Oil	1942	Out of Service
359	880	No. 2 Fuel Oil	1942	Out of Service
754	200	Gasoline	1956	Emergency Generator Fuel
770	1,000	Used Motor Oil	1983	Waste Oil
770	10,000	No. 2 Fuel Oil	1983	Heating Fuel
770	1,000	Used Motor Oil	1953	Waste Oil
770	400	Gasoline	1963	Vehicle Refueling
T875	1,000	No. 2 Fuel Oil	---	Out of Service

ANNEX C-4

STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS

Primary	Secondary
Sulfur Dioxide	**Sulfur Dioxide**
80 µg/m³ - annual arithmetic mean (0.03 ppm) 365 µg/m³ - 24-hour maximum* (0.14 ppm)	1300 µg/m³ - 3-hour maximum* (0.5 ppm)
Particulate Matter	**Particulate Matter**
75 µg/m³ - annual geometric mean 260 µg/m³ - 24-hour maximum*	60 µg/m³ - annual geometric mean 150 µg/m³ - 24-hour maximum*
Lead	**Lead**
1.5 µg/m³ - quarterly arithmetic mean	1.5 µg/m³ - quarterly arithmetic mean
Carbon Monoxide	**Carbon Monoxide**
10 mg/m³ - 8-hour maximum* (9 ppm) 40 mg/m³ - 1-hour maximum* (35 ppm)	10 mg/m³ - 8-hour maximum* (9 ppm) 40 mg/m³ - 1-hour maximum* (9 ppm)
Ozone	**Ozone**
235 µg/m³ - 1-hour maximum† (0.12 ppm)	235 µg/m³ - 1-hour maximum† (0.12 ppm)
Nitrogen Dioxide	**Nitrogen Dioxide**
100 µg/m³ - annual arithmetic mean (0.05 ppm)*	100 µg/m³ - annual arithmetic mean (0.05 ppm)*
Gaseous Fluorides (expressed as HF)‡	**Gaseous Fluorides (expressed as HF)‡**
1.2 µg/m³ - 30-day arithmetic mean* (1.5 ppb) 1.6 µg/m³ - 7-day arithmetic mean* (2.0 ppb) 2.9 µg/m³ - 24-hour maximum* (3.5 ppb) 3.7 µg/m³ - 12-hour maximum* (4.5 ppb)	1.2 µg/m³ - 30-day arithmetic mean* (1.5 ppb) 1.6 µg/m³ - 7-day arithmetic mean* (2.0 ppb) 2.9 µg/m³ - 24-hour maximum* (3.5 ppb) 3.7 µg/m³ - 12-hour maximum* (4.5 ppb)

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* Not to be exceeded more than once per year
† Standard is attained when number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is equal to or less than 1.0 (see 40 CFR 50, Appendix H)
‡ Standards established by the State of Tennessee

APPENDIX D

GROUND-WATER AUDIT

1. REFERENCES.

a. Letter, USAEHA, HSHB-ES-G/WP, 20 January 1983, subject: Geohydrologic Study No. 38-26-0195-83, Defense Depot Memphis, Memphis, Tennessee, 21 June - 2 July 1982.

b. Installation Assessment of Defense Depot Memphis, Memphis, Tennessee, USATHAMA Report No. 191, July 1982.

c. TEST, Inc., Foundation Soils Investigation, Gas Fired Heating Plants, Defense Depot Memphis, Memphis, Tennessee, 1977.

2. FINDINGS AND DISCUSSION.

a. Geohydrologic Setting.

(1) Physiographic Description. The DDMT is located in an area known as the "Loess Hills," a narrow band parallel to the eastern wall of the Mississippi River Valley. This band lies within the Mississippi Embayment portion of the East Gulf Section of the Atlantic and Gulf Coastal Plains province.

(2) Geology. The Mississippi Embayment is a downwarped, partly downfaulted trough in Paleozoic rocks. The axis of the trough has migrated in past geologic time, but now approximates the course of the Mississippi River. The trough has been filled with unconsolidated gravels, sands, and clays ranging in age from Late Cretaceous to Recent. In Tennessee, the unconsolidated sediments reach a maximum thickness of 2700 to 3000 feet at Memphis. Widespread terraces of extensive quantities of sand and gravel mixed with varying amounts of silt and clay were formed due to Late Tertiary and Early Quaternary movement through the area. The presently exposed surface in the Memphis area consists of windblown clays and silts called loess. The loess is 75 feet or more thick on the bluffs forming the eastern valley wall and thins out to the east.

(3) Ground Water. Defense Depot Memphis has no water supply wells and receives all water from the City of Memphis which relies solely on ground water for potable and nonpotable water supply. Approximately 97 percent of the water is pumped from the Memphis Sand of the Claiborne Group and 3 percent from the Fort Pillow Sand of the Wilcox Group. The Memphis Sand is separated from the overlying water table aquifer by the Jackson Formation, a relatively thick and widespread confining bed composed primarily of clay. There are local "windows" of sand in the Jackson Formation which do allow some vertical leakage and recharge to the Memphis Sand from the water table aquifer. The Memphis Sand and the Fort Pillow Sand formations are also separated by a clay confining layer called the

Flour Island Formation. Annex D-1 summarizes the characteristics of the geologic formations in the Memphis area. The ground water at the Dunn Field area of DDMT is 60 to 70 feet below the ground surface in the fine-grained silty loess and flows to the west.

b. Potential Sources of Contamination.

(1) Most of the potential sources of ground-water contamination were previously identified by USAEHA (reference 1a) and USATHAMA (reference 1b). Those sites identified were the Dunn Field area burial sites, the PCP dip vat, and accumulations of spills in the old repackaging area at the corner of 21st and E Streets.

(a) The Dunn Field area burial sites were identified by USAEHA to have the highest potential for ground-water contamination due to the large number of known burial sites and the various disposed items. Six functional monitoring wells were installed and sampled by USAEHA during the period 21 June to 2 July 1982. Annex D-2 shows the locations of the wells and all identified burial sites. Results of the chemical analyses of the 1982 samples indicated that no significant ground-water contamination had resulted from the disposal operations. It should be noted that analyses for organic compounds were not performed. Although monitoring is not required by an regulatory authority at this time, samples should be collected from the six wells and analyzed for the parameters listed in Annex D-3 to confirm that contamination still does not exist.

(b) The PCP dip vat in Bldg 737 is a large open tank which was used to treat wood products, primarily pallets, from 1952 to the late 1970's. The vat has been used infrequently since 1971, and it has not been cleaned or drained since construction. When the remaining PCP has been used, the vat will not be refilled. If the vat is removed and leaking is identified, a potential for contamination of the ground water exists.

(c) Repackaging operations were conducted outdoors in a lean-to at the corner of 21st and E Streets until the late 1970's. The gravel area was identified by USATHAMA as a potential area for contamination due to spill accumulations. No remnants of the old repackaging operation were discovered during the audit.

(2) Additional sites identified during the audit as having potential for ground-water contamination included all the underground storage tanks and spill accumulations in outdoor storage areas.

(a) At least nineteen underground storage tanks exist on DDMT. These individual tanks contain various fluids including fuel, waste oil, PCP, and pesticide rinse water. None of the tanks have been tested for leaks. Any leaking underground tank presents a potential for ground water contamination.

(b) All of the outdoor storage areas located on gravel bases had areas of spills and spill accumulations. The area east of Bldg S873 was being used as a temporary storage area for items requiring recoupment in Bldg S873. A significant spill of a carbon cleaning compound containing cresylic acid and methylene chloride occurred as the result of 360 leaking 5-gallon containers. Because the compound is a listed hazardous waste (refer to Appendix F - Hazardous Waste Audit for more details), the soil should be removed until chemical analysis of the soil shows none detected. If soil contamination extends to the water table, additional ground water work will be necessary. The DRMO storage yard had areas of waste oil spills resulting from leaks in the 55-gallon drums. Spills resulting from leaks in the 55-gallon drums of POL mission stock were identified in the open storage area north of Bldg S873.

ANNEX O-1

STRATIGRAPHIC COLUMN - MEMPHIS AREA

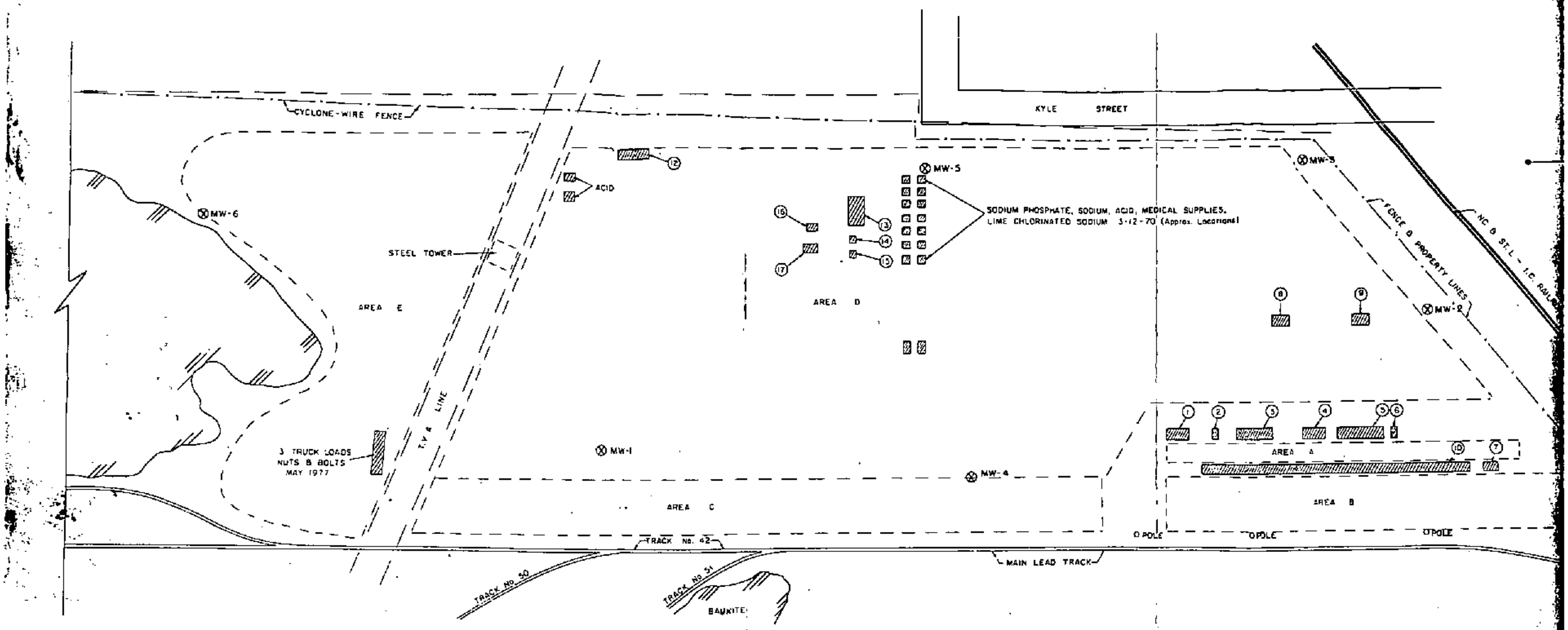
System	Series	Group	Stratigraphic Unit	Thickness (feet)	Lithology and Environmental Significance
Quaternary	Holocene and Pleistocene		Alluvium	0-175	Sand, gravel, silt, and clay. Provides borrow material for fills and levees and some aggregates for concrete and bituminous mixes. Used as foundation material or base on which fill is placed for residences and light buildings in flood plains. Lower sand and gravel beneath Mississippi Alluvial Plain used as foundation material for heavy structures. Supplies water to a few industrial wells on President and Mud Islands.
	Pleistocene		Loess	0-65	Silt, silty clay, and minor sand. Used generally as foundation material for residences and light buildings in upland areas. Provides material for fills placed in low places and flood plains. Thick deposits utilized for solid waste disposal.
Quaternary and Tertiary (?)	Pleistocene and Pliocene (?)		Fluvial deposits (terrace deposits)	0-100	Sand and gravel; minor ferruginous sandstone and clay. Provides most commercial aggregates for concrete and bituminous mixes. Used as a foundation material for heavy structures and high-rise buildings in upland areas. Supplies water to many shallow

System	Series	Group	Stratigraphic Unit	Thickness (feet)	Lithology and Environmental Significance
Quaternary and Tertiary -Continued					domestic wells in suburban and county areas. Some abandoned gravel pits utilized for solid waste disposal.
Tertiary	Eocene	?	Jackson Formation and upper part of Claiborne Group ("capping clay")	0-350	Clay, fine-grained sand, and lignite. Used as foundation material for heavy structures and for high-rise buildings where overlying fluvial deposits are thin or absent and where alluvial materials are unsuitable. Supplies water to some shallow wells completed in sands below the fluvial deposits, but generally considered to be of low permeability and to confine water in Memphis Sand. Lower boundary very poorly defined.
		Claiborne	Memphis Sand ("500-foot" sand)	500-800	Fine- to coarse-grained sand; subordinate lenses of clay and lignite. Very good aquifer from which most water for public and industrial supplies is obtained. Upper boundary very poorly defined.
	?	Wilcox	Flour Island Formation	160-350	Clay, fine-grained sand, and lignite. Confines water in Memphis Sand and Fort Pillow Sand.

System	Series	Group	Stratigraphic Unit	Thickness (Feet)	Lithology and Environmental Significance
Tertiary -Continued	Paleocene	Wilcox -Continued	Fort Pillow Sand ("1400-foot" sand)	210-280	Fine- to medium-grained sand; subordinate lenses of clay and lignite. Once used as second principal aquifer for Memphis; now reserved for future use. Presently supplies water to a few industrial wells.
			Old Breastworks Formation	200-250	Clay, fine-grained sand, and lignite. Relatively impermeable lower confining bed for water in Fort Pillow Sand.

ANNEX D-2

LOCATION OF MONITORING WELLS AND BURIAL SITES AT DUNN FIELD



1. 6 SETS 1" x 9" MUSTARD & LEWSITE GAS. BURIED 22 JULY '55.
2. 1-7 LB. JUG AMMONIA HYDROXIDE, 1 GAL. BOTTLE ACETIC ACID CALCEL. BURIED 7 JULY '55.
3. 3,000 QUARTS of CHEMICAL, 5 CU. FT. ORTHO-TALUDINE DEHYDRACHLARIDE. BURIED 24 JULY '55.
4. 13-55 GAL. DRUMS of OLD OIL, GREASE, & PAINTS.
5. 32-55 GAL. DRUMS of OLD OIL, GREASE, & THINNER. BURIED 20 APRIL '55.
6. 3 CU. FT. METHYL BROMIDE. BURIED 6 APRIL '55.
7. 40,037 N.S.N. UNITS of OINTMENT, (Eth Ball) BURIED 2 NOV. '55.
8. 1700 BOTTLES FUMING NITRIC ACID. BURIED 4 FEB. '54.
9. 3,768 - 1 GAL. CANS METHYL BROMIDE (Buried 7' Deep).
10. ASHES & METAL REFUSE from BURNING PIT. BURIED 14 NOV. '55.
11. TRICHLOROACETIC ACID 1433, 1 OZ. BOTTLES. BURIED 6 FT. DEEP 11 JUNE '65.
12. 30 PALLETS SULPHERIC HYDROCHLORIC. BURIED 8 FT. DEC. '67.
13. 32 CU. YDS. MIXED CHEMICALS & ACIDS, 9 SACKS DETERGENT, 70 SACKS ALUMINUM SULFATE, 2 SACKS SODIUM DICHROMATE, 20 SACKS SODIUM CARBONATE, 4 SACKS SODIUM PHOSPHATE. ALL SACKS 100 LBS. EA. BURIED 8' DEEP MARCH '68.
14. PALLET of SODIUM. BURIED SEPT. '68.
15. PALLET of ACID. BURIED JAN. '69.
16. HERBICIDE, CLEANING COMPOUND, MISCELLANEOUS MEDICAL SUPPLIES. BURIED JAN. '69.

LOCATION MAP for MONITORING WELLS
DUNN FIELD AREA, DEFENSE DEPOT MEMPHIS.
MEMPHIS, TN:

Scale: 1" = 50'

ANNEX D-3

RECOMMENDED PARAMETERS FOR GROUND-WATER SAMPLING AT DUNN FIELD

Metals
- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Selenium
- Silver
- Iron
- Manganese
- Sodium
- Copper
- Aluminum
- Mercury

Non-metal Inorganics
- Nitrite-nitrate as nitrogen
- Fluoride
- Chloride
- Sulfate
- Total phenols
- Specific conductivity
- pH

Organics
- Acid Extractables
- Base/Neutral Extractables
- Pesticides/PCB's
- Herbicides
- Purgeables

APPENDIX E

HAZARDOUS WASTE AUDIT

1. REFERENCES. See Annex E-1 for a listing of references.

2. GENERAL. State Hazardous Waste Management Regulations. On 5 February 1985, the State of Tennessee was granted final authorization by the EPA to operate its own HW management program. Generators, transporters, and owners/operators of HW TSDFs in Tennessee are now subject to the Tennessee HW management regulations in lieu of the Federal regulations adopted by the EPA. The Tennessee Department of Public Health (DOPH) has been designated as the lead agency in developing and administering the State's HW management program. The State's HW management regulations can be found in Chapter 1200 (Hazardous Waste Management) of the Rules of the Tennessee Department of Public Health, Division of Solid Waste Management (reference 13).

3. FINDINGS AND DISCUSSION.

a. Regulatory Status.

(1) Notification of HW Activity. The DDMT has notified both EPA Region IV and the DOPH of its HW activities IAW 40 CFR 262.12 and TR 1200-1-11-.03(2), respectively. As a result of this notification, DDMT has been assigned a State HW identification number.

(2) HW TSDF Applications. The DDMT submitted a Resource Conservation and Recovery Act (RCRA) Part A permit application for HW TSDFs to both the EPA Region IV and the DOPH on 26 February 1981. As a result of that submittal, DDMT was granted permission to operate a HW storage facility under interim status until a RCRA Part B permit application is requested and a final RCRA permit granted. The DDMT operated a HW storage facility under interim status until 22 April 1983, when, in response to a request from the Director of Installation Services, the DOPH withdrew the DDMT Part A permit application, thus revoking DDMT's interim status.

(3) Present Regulatory Status. As a result of the revocation of DDMT's interim status, DDMT is now classified by the DOPH as a HW generator only. As such, DDMT may not treat, store, or dispose of HW or begin construction of facilities for such purposes without first applying for and receiving a RCRA Part B permit for HW TSDF's [TR 1200-1-11-.07(1)(b)1.(i)]. The DDMT must also comply with all of the requirements for HW generators listed in TR 1200-1-11-.03.

b. HW Generation and Management. Throughout the course of this audit, various DDMT facilities were visited to determine if they generated HW and, if so, if those wastes were managed IAW the DOPH regulations for HW generators. It is important to note that even though HW may be generated

by various DDMT facilities and tenant activities, it is the installation as a whole that is regarded by the DOPH as the HW generator. Therefore, the ultimate responsibility for complying with the DOPH HW regulations lies with the commander of DDMT. Discussion about the observations made during the HW management portion of this audit is provided in the following paragraphs.

(1) HM Spill Residue. Large quantities of HM stock items were stored at DDMT. The management (e.g., storage) of those materials is not subject to the DOPH HW regulations. However, when a spill occurs that involves a HM whose name is listed in TR 1200-1-11-.02(4)(d), all spill cleanup residues and contaminated soil are, by definition, a HW and must be managed as such [TR 1200-1-11-.02(4)(d)]. During this audit, HM storage building numbers 319, 629, 689, and 873, and the HM storage areas X-13 and X-26 were visited. The following observations were made with respect to HM spill residue management at each of those buildings/areas.

(a) HM Spill Cleanup Instructions. Located inside of each HM storage building were HM spill cleanup kits. Each kit consisted of a wooden bin containing spill cleanup equipment (e.g., absorbents, bags, and brooms) designed to cleanup specific types of HM spills (e.g., corrosives, flammables). An SOP attached to each kit instructed warehouse personnel to cleanup the spill residues, then to contact USAHEA for disposal instructions. It should not be the responsibility of each warehouse worker who cleans up a HM spill to obtain disposal instructions from USAHEA. An individual at DDMT (e.g., an environmental manager) should be appointed as the single point of contact for warehouse workers to call to obtain disposal instructions. The installation point of contact may then obtain disposal guidance from USAEHA. Once this centralized system is implemented, all of the HM spill cleanup SOPs should be revised to reflect the change.

(b) Improper Packaging of HM Spill Residue.

- Each HM spill kit contained a supply of plastic bags. The bags were used to line cardboard boxes, into which spill residues were placed. The boxed residue was delivered to the DRMO for storage, awaiting ultimate disposal. The storage of HW in plastic-lined cardboard boxes is not an acceptable practice. Under provisions of TR 1200-1-11-.03(4)(b), a HW generator may store HW onsite for less than 90 days without interim status or a HW storage permit only if the wastes are stored in compatible containers or tanks. Furthermore, the containers or tanks must be clearly marked with the words "Hazardous Waste," and, in the case of containers, the date upon which accumulation began must be marked on each container. In order to comply with these requirements, each spill kit should be stocked with a supply of appropriate containers (i.e., containers made of materials that are compatible with the type of waste that will be placed into them). As soon as the spill residue is placed into a container, the container should be labeled with its identity, the words "Hazardous Waste," and the date.

- It should be emphasized that not all HM spill residue is HW; therefore, not all HM spill residue must be handled in the manner described in the previous paragraph. One example of HM spill residue that should not be managed as HW was observed in Bldg 873. Stored in this building was a plastic-lined cardboard box containing residue from the cleanup of a sulfuric acid spill. When the spill occurred, the sulfuric acid was neutralized with sodium bicarbonate and the resultant neutralized mixture absorbed with vermiculite. Spilled sulfuric acid would be classified as a HW based solely on its characteristic of corrosivity. However, once it has been adequately neutralized, it no longer exhibits any hazardous characteristics; therefore, it would no longer be a HW. This spill residue should be disposed of along with regular trash.

(c) Observed HM Spill. An actual HM spill was observed in an open storage area adjacent to Bldg 873. The spill involved 360 5-gallon containers of a carbon-removing compound that were awaiting recoupment in Bldg 873. Many of the containers were badly deteriorated and leaking. Much of the compound had accumulated in puddles on the ground around the containers. The active ingredients in the compound are methylene chloride (55 percent) and cresylic acid (16 percent). Both of these constituents are listed in TR 1200-1-11-.02(4)(d)6 as toxic HWs. Therefore, this spill constitutes HW generation and all spill cleanup residue and contaminated soil must be managed as HW. Actions were underway at the time of this audit to recoup the leaking containers. Further action must be taken to excavate the soil contaminated with the compound and dispose of it as a HW [IAW TR 1200-1-11-.02(4)(d)4]. Another consideration that should have been taken into account at the time of this spill was whether the notification and reporting requirements under 40 CFR 302 were applicable. Under provisions of this regulation, the release into the environment of hazardous substances in quantities equal to or greater than those listed in 40 CFR 302.4 must be reported immediately to the National Response Center. The reportable quantity for both the cresylic acid and methylene chloride is 1,000 lbs (approximately 110 gallons). Under provisions of 40 CFR 302.6(b), the release of a mixture of hazardous substances (such as this carbon removing compound) must be reported when any one component is released in quantities equal to or greater than its reportable quantity. Since the carbon removing compound contained 55 percent methylene chloride (reportable quantity equals 110 gal), approximately 200 gallons of the compound would have to spill to constitute a reportable quantity (200 gal carbon removing compound x 55 gal methylene chloride/100 gal carbon removing compound = 110 gal methylene chloride). The quantity of carbon removing compound that had actually spilled could not be determined during this audit. Installation personnel should make this determination and, if necessary, comply with the notification requirements of 40 CFR 302.

(2) Empty HM Containers. The recoupment facility, Bldg 837, generated empty HM containers. The empty containers were turned in to the DRMO for disposal. Under provisions of TR 1200-1-11-.02(1)(g), any residue remaining in a container that has held any of the commercial products listed as toxic or acutely toxic HW is subject to regulation as HW unless the container meets the following definition of empty:

(a) For acutely toxic HW [listed in TR 1200-1-.02-(4)(d)(5)], a container is empty when the container or inner liner has been triple rinsed using a solvent capable of removing the waste or cleaned by another method that has been scientifically proven to achieve equivalent removal.

(b) For toxic HW [listed in TR 1200-1-11-.02(4)(d)(6)], a container is empty when all waste has been removed that can be removed and no more than 1 inch of residue remains. According to DRMO personnel, all empty HM containers were disposed of as HW. Disposal of all empty HM containers as HW may be unnecessary. Personnel at the recoupment facility and the DRMO should be made aware of the above-listed provisions and dispose of empty HM containers accordingly.

(3) Drums Containing Unidentified Wastes. Located at one end of the DRMO storage yard were approximately 200 drums of various sizes. Many were unlabeled and badly deteriorated. Some of the drums contained unidentified wastes. Immediate action should be taken to dispose of these drums. Empty drums should be disposed of IAW the guidelines presented in paragraph 4b(2). Those drums containing unidentified wastes should be sampled and the samples analyzed to determine if they are HW. Hazardous and nonhazardous wastes should be disposed of accordingly.

(4) Used Motor Oil. Generators of used motor oil collected their oil in 55-gallon drums. Each generator hauled his drums to the DRMO yard. The DRMO arranged for a civilian oil recycler to pump the oil from the drums on a regular basis. Plans were underway to implement a new used-oil storage system. Under the new system, used-oil generators would deliver their used oil drums to Bldg 770. The oil would be pumped from the drums into a below-ground 500-gallon tank located behind Bldg 770. The used oil recycler would remove the oil from the tank on a regular basis. The storage and recycling of used motor oil in this manner is environmentally and economically sound.

(5) Used Solvent Management. On 10 January 1984, the Assistant Secretary of Defense for Manpower, Installations, and Logistics issued a memorandum requiring all military departments to initiate a Used Solvent Elimination (USE) Program (reference 16). The goal of the program is to eliminate the disposal of recyclable solvents as HW by 2 October 1986. In order to ensure the implementation of such a program at DDMT, the DLA environmental office, in a letter dated 12 December 1984 (reference 17), requested that DDMT submit a schedule of milestones in reaching the October 1986 deadline. In response to that letter, DDMT indicated that a closed-loop solvent vendor (recycler) was being utilized at DDMT. The vendor supplied the parts-cleaning machines and parts-cleaning solvent. Periodically, fresh solvent was exchanged for spent solvent by the vendor. Therefore, according to the DDMT Office of Installation Services, no used solvents were disposed of. During this audit, however, it was discovered that several installation maintenance activities generated used solvents (in addition to those supplied by the solvent vendor) and that the DRMO disposed of those used solvents as HW. The following used-solvent generators were identified:

(a) Installation Motor Pool (Bldg 263). About 200 gallons of spent, ignitable parts-cleaning solvent were generated each year at the motor pool grease rack. The solvent was collected in drums and turned in to the DRMO for disposal.

(b) Electric Forklift Maintenance Shop (Bldg S-469). Undetermined quantities of spent, ignitable parts-cleaning solvent were collected in drums and turned in to the DRMO for disposal.

(c) MHE Repair Shop (Bldg 770). Undetermined quantities of spent, toxic and ignitable carburetor cleaner were collected in drums and turned in to the DRMO for disposal.

(d) Vehicle Paint Booth (Bldg 770). Undetermined quantities of spent, ignitable paint thinners (contaminated with a variety of paints) were comingled in containers and turned in to the DRMO for disposal.

(e) FED, Division Carpentry Shop (Bldg 260). Undetermined quantities of spent, ignitable paint thinners (contaminated with a variety of paints) were comingled in containers and turned in to the DRMO for disposal.

The disposal, as waste, of spent parts-cleaning solvents should be eliminated by utilizing the closed-loop solvent vendor for all parts-cleaning needs. To facilitate the recycling of spent paint thinners, each type of spent thinner should be collected in a separate container. A record of the paints that the thinners are contaminated with should also be maintained. The spent thinners should be turned in to the DRMO for recycling.

(6) Used Lead-Acid Battery Disposal. All used lead-acid batteries generated at DDMT were sold through the DRMO to a recycler. Each generating activity strapped its used batteries (with the electrolyte intact and vent caps securely fastened) to pallets and turned them in to the DRMO. The recycling of used batteries with electrolyte intact is environmentally and economically sound.

(7) Abrasive Blasting Residue. At Bldg 1088, unpainted, metal mission stock items and painted items owned by DDMT (e.g., dumpsters) were blasted with a low silica abrasive. Exhaust air from the blasting booth was filtered through a baghouse and the abrasive residue and paint dust collected in 55-gallon drums. The abrasive itself consisted of silicon, iron, and aluminum oxide and posed no disposal problems. However, since approximately 5 to 10 percent of the blasting done in this building involved painted items, there existed the possibility that the abrasive residue and paint dust mixture contained hazardous heavy metals from the paint. Approximately 40 open-top 55-gallon drums of the blasting residue were stored in an open area south of storage area X-25. No action had been taken to dispose of this waste. Representative samples of the residue should be collected and analyzed for the characteristic of EP toxicity (heavy metals) and the residue disposed of accordingly.

(8) PCB Management. A comprehensive electrical transformer inventory and PCB testing program had been completed by DDMT. All transformers identified as containing PCB or PCB-contaminated dielectric fluid were appropriately labeled. A complete and up-to-date inventory book of all electrical transformers at DDMT was maintained by the FED Electrical Shop. Records of the results of the PCB testing program were maintained in the FED office. Each electrical transformer in service at DDMT is visually inspected by FED personnel each day. No PCB or PCB-contaminated items were stored for disposal at the time of this audit.

(9) Pesticide Waste Management. All pesticides used at DDMT were stored and mixed at the Pesticide Shop, Bldg 737. Pesticide mixing and empty-container rinsing was done in three sinks in this building. The sinks drained into a below-ground, 1000-gallon tank located just outside the building. All of the pesticide-contaminated rinse water that collected in the tank was reused by mixing with new pesticides prior to application. Empty pesticide containers were triple-rinsed and punctured IAW 40 CFR 165, and disposed of through the DRMO.

(10) PCP Dip Vat. Located in a Bldg attached to the pesticide shop (Bldg 737) was an inground, 20,000-gal open vat that was partially filled with a wood treatment product containing PCP. The vat was fed by a below ground 5,000-gallon tank located outside the building. The quantity of PCP product in the below ground tank could not be determined during this audit. According to shop personnel, the dip vat is still used periodically to treat wooden pallets. Personnel from the FED expressed an interest in disposing of the PCP product and removing the vat. In an effort to determine the proper disposal method for the PCP product, and if there is soil contamination around the vat, an indepth study has been scheduled by this Agency.

(11) DRMO HW Storage Building.

(a) Accumulation Time. The DRMO stored the installation's HW in Bldg 308. As was stated in paragraph 4a(2), DDMT does not have interim status or a RCRA Part B permit to operate a HW storage facility. Therefore, HW may not be stored in the DRMO HW storage building or, for that matter, any building at DDMT for more than 90 days. The storage dates listed on the HW in storage in this building at the time of this audit indicated that the wastes had been in storage for less than 90 days. However, DRMO personnel indicated that, occasionally, it takes greater than 90 days to move HW off the installation. When that occurs, DDMT is in violation of the State's requirements for HW generators [TR 1200-1-11.03-(4)(b)(1)]. The DDMT should either ensure that all HW are removed from the installation within 90 days of generation or apply to the DOPH for a RCRA Part B permit for HW storage.

(b) Container Storage. Under provisions of TR 1200-1-11-.05(4)(b)1(i), (ii), and (iii), a HW generator, may accumulate HW onsite for less than 90 days

provided that the waste is placed into containers and the following requirements for the use and management of those containers [listed in TR 1200-1-11-.05(9)] are complied with:

- containers are made of materials that are compatible with the wastes they contain.

- the date upon which the container was placed into storage is clearly marked on each container.

- each container is clearly marked with the words "Hazardous Waste."

- containers are maintained in good condition and kept closed during storage.

- containers are handled and stored in a safe manner.

- containers are inspected at least once per week.

With respect to the above-listed requirements, only one discrepancy was noted during a tour of the HW buildings: several instances of unsafe (i.e., incompatible) storage of HW were observed. For example, three 55-gallon drums of perchloric acid (an oxidizing mineral acid), stacked one atop the other, were stored next to several containers of methylethylketone (an ignitable solvent). Should a leak occur involving these two wastes, their combination could result in the generation of heat and/or fire. The DRMO's personnel should ensure that HW's are stored compatibly in this building.

(c) Records of Inspection. Under provisions of TR 1200-1-11-.05(4)(b)1(iv), a generator who stores HW onsite for less than 90 days must maintain weekly inspection logs IAW TR 1200-1-11-.05(2)(f)4. The logs must include the dates and times of the inspections, the inspector's names, observations made, and the dates and nature of repairs made or remedial actions taken. The logs must be retained for at least 3 years from the date of the inspection. All of the weekly inspection logs for Bldg 308 were reviewed during this audit. Only the following discrepancies were noted; the logs lacked the time of each inspection and the dates and nature of corrective action taken. In the future, DRMO personnel should ensure that these items are included in the inspection logs.

(d) Personnel Training. Under provisions of TR 1200-1-11-.03(4)(b)1(iv), HW generators who store HW onsite for less than 90 days must comply with the personnel training requirements listed in TR 1200-1-11-.05(2)(g). These requirements are as follows:

- all persons who handle HW must receive classroom or on-the-job HW management training within 6 months of employment.

- each HW handler must receive an annual HW management training review.

- training records for each HW handler must be maintained and include a job title, written job description, written description of training (initial and annual), and documentation to certify that training was received.

- training records must be maintained until closure of the facility or for former employees, for at least 3 years from the date the employee last worked at the facility. All training records were reviewed during this audit and the following discrepancies were noted:

- of the six HW handlers identified as working in Bldg 308, records indicated that two have received neither initial nor annual review HW management training.

- none of the four individuals who have received initial HW management training appear to have received annual review training.

- a written description of initial and review training was not available.

- documents to certify training completion were not available.

The DRMO personnel should ensure that all of the above listed discrepancies are corrected.

(e) Contingency Plans and Emergency Procedures. Under provisions of TR 1200-1-11-.03(4)(b)(iv), HW generators who store HW onsite for less than 90 days must comply with the contingency plan and emergency procedures requirements listed in TR 1200-1-11-.05(3) and (4). The DRMO HW storage building has been adequately addressed in the DDMT SPCCP and ISCP; therefore these requirements have been fulfilled. A copy of the SPCCP is on file in the DRMO IAW TR 1200-1-11-.05(4)(d)1.

(f) HW Manifests. Under provisions of TR 1200-1-11-.03(3), HW generators must initiate HW manifests for all HW shipped off site. The manifests must be managed IAW TR 1200-1-11-.03(5) which outlines recordkeeping and reporting requirements. Those requirements include the following:

- generators must keep one copy of the signed manifest for at least 3 years or until the return copy signed by the TSDF is received.

- generators must keep return copies signed by the TSDF for at least 3 years from the date the waste was accepted by the initial transporter.

- If the generator doesn't receive a signed copy of the manifest from the TSDF within 45 days from the date the waste was accepted by the initial transporter, he must submit an exception report to the State DOPH. The DRMO was responsible for initiating and managing all HW manifests at

DDMT. During this audit, all HW manifests for the years 1983 through 1985 were reviewed. All manifests were prepared and all return copies from TSDF's were attached. No discrepancies were noted. Copies of all manifests were sent to the FED who prepared the HW generator annual report.

(g) Annual HW Reports. Under provisions of TR 1200-1-11-.03(5)(b), all HW generators must submit an annual HW report to the DOPH. The FED prepared the reports based on information obtained from the HW manifests prepared by the DRMO. The FED's annual HW report file was reviewed during this audit. Annual reports for the years 1982 through 1985 were reviewed and no discrepancies noted.

c. DDMT HW Management Program. The DDMT has neither developed nor implemented a comprehensive HW management program. The need for such a program at DDMT was obvious during the conduct of this audit and has been further justified throughout the text of this report. A successful HW management program has several components, each of which will be discussed in the following paragraphs. A detailed guideline for developing a HW management program may be found in the USAEHA Technical Guide 136, reference 15.

(1) HW Program Manager. An individual should be appointed as the DDMT HW program manager. The program manager should serve as the installation's HW management expert and be able to bridge all directorates to coordinate and resolve HW management problems. As the HW Management expert, the HW Program Manager must be knowledgeable of all Federal, State, local, and DOD HW Management regulations and must keep abreast of changes to those regulations.

(2) HW Management Board. It could be virtually impossible for the HW Program Manager to oversee all HW-related operations at DDMT; therefore, a HW Management Board should be formed. Each major HW generating or handling activity (e.g., directorates and DRMO) should have a representative on the board. Each board member would serve as the HW Program Manager's "eyes and ears" in the field. The board would also serve as a means for the Program Manager to disseminate information to the field.

(3) HW Management Plan. The development and implementation of a written HW management plan is a requirement outlined in DOD 4160.21-M (reference 14). Its development and implementation at DDMT would greatly improve the installation's HW management practices. An effective HW management plan should include but not be limited to the following items:

(a) Organizational responsibility statements.

(b) Comprehensive and regularly updated HW inventory (identifies HW generators at DDMT in addition to the type and quantity of HW generated).

(c) Deficiencies in the current management of HW, with required projects and equipment needed to correct deficiencies.

(d) Site specific HW management SOP's (e.g., an SOP that describes, in detail, the procedures to be used to collect, package, label, store, and turn in a hazardous cleaning compound at a particular maintenance shop).

(e) Waste Analysis Plan. A detailed plan that describes the methods that will be used to collect samples and the identity of a laboratory that will perform the analyses. One example of a situation in which a waste analysis plan would be beneficial is the identification of unknown wastes prior to disposal.

d. Impact of the Hazardous and Solid Waste Amendments (HSWA) of 1984 on DDMT. On 8 November 1984, the President signed into law the HSWA of 1984. This new statute made many significant changes to the EPA's existing HW management programs. Many of the provisions of the HSWA have already taken effect while others are scheduled to take effect in a short time. In Tennessee, which has already received final authorization from EPA to operate its own HW management program, the HSWA takes effect on the same date as they do in states without final authorization. The HSWA's will be implemented in all states by the EPA until each state has received authorization to implement them. Following are the provisions of the HSWA's that either have an immediate impact on DDMT or will have an impact in a short period of time.

(1) Corrective Action. Section 206 of the HSWA has amended Section 3004 of RCRA by adding paragraph (u) governing releases at facilities seeking a RCRA HW permit for TSDF's. This provision requires all facilities seeking HW TSDF permits after 8 November 1984 to include, with their permit application, information on releases of HW or hazardous constituents from any solid waste management unit under that facility's control regardless of when the release occurred, or when waste was placed in such a unit. If DDMT plans to submit a RCRA Part B permit application for a HW storage facility, this additional information must be submitted with the application. This new requirement has been codified in the existing RCRA regulations by adding a new section 264.101 to subpart F of 40 CFR 264.

(2) Waste Minimization.

(a) Section 224 of the HSWA amended section 3002 of RCRA by adding a new subsection (b) requiring that effective 1 September 1985, all HW manifests must contain a certification by the generator regarding efforts taken by him to minimize the amount and toxicity of wastes generated. The EPA has codified this requirement by publishing a revised Uniform Hazardous Waste manifest form (EPA Form 8700-22) in the Appendix to 40 CFR 262. The new manifest includes a waste-minimization certification statement. The DDMT must use the new form for all HW shipped offsite beginning 1 September 1985.

(b) Section 224 of the HSWA also amended section 3002 of RCRA by including in subsection (b) a requirement for generators to certify that a waste minimization program is in place. The EPA has codified this requirement by amending 40 CFR 262.41 to require waste minimization information in the currently-required generator's biennial report. The DDMT will have to include this information in its generator reports to the State DOPH.

(3) Management of Used Oil. Section 241 of the HSWA amended section 3014 of RCRA by adding the following:

(a) Not later than 8 November 1985, the EPA must propose whether to list used auto or truck crankcase oil as HW.

(b) Not later than 8 November 1986, the EPA must make a final decision on the listing of waste oil.

(c) Not later than 8 November 1986, the EPA must promulgate standards for used oil that is recycled. The standards will exempt generators who recycle used oil from manifesting, recordkeeping, and reporting requirements for HW. In order to be exempt from the regulatory requirements that may be applied to used oil that is not recycled, DDMT should continue to send all of its used oil to an oil recycler.

(4) Underground Storage Tank. Section 601 of the HSWA adds Subtitle I to RCRA. This new Subtitle consists of regulations for underground storage tanks that store regulated substance (i.e., petroleum and substances identified as "hazardous substances" in 50 FR 13456 that are not regulated as HW under RCRA). Certain types of underground storage tanks are excluded from these new regulations. They include, tanks used to store heating oil for consumptive use on the premises where stored, septic tanks, and storm water and wastewater collection systems. The new Subtitle I requirements include the following:

(a) not later than 8 May 1986, each owner of currently-used underground storage tanks and nonoperational underground storage tanks taken out of service after 1 January 1974 (unless the tank was removed) must notify the State specifying the age, size, type, location, and use of the tank(s).

(b) Effective 7 May 1985, a prohibition on the installation of any new underground tank for the purpose of storing regulated substances unless:

- the tank will prevent releases due to the corrosion or structural failure for the operational life of the tank;

- the tank is cathodically protected against corrosion, constructed of noncorrosive material, or designed in a manner to prevent the release or threatened release of any stored substance; and

- the material used in the construction of the tank is compatible with the substance to be stored.

The provisions of this amendment have been codified as 40 CFR 280. The DDMT personnel should become familiar with these new requirements in order to ensure DDMT's compliance.

ANNEX E-1

REFERENCES

1. Public Law (PL) 94-580, 21 October 1976, Resource Conservation and Recovery Act of 1976, as amended by PL 98-616, 8 November 1984, Hazardous and Solid Waste Amendments of 1984.

2. Title 40, Code of Federal Regulations (CFR), 1984 rev, Part 165, Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticide Containers.

3. Title 40, CFR, 1984 rev, Part 260, Hazardous Waste Management System: General.

4. Title 40, CFR, 1984 rev, Part 261, Identification and Listing of Hazardous Waste, as amended by 50 Federal Register (FR) 663, 4 January 1985.

5. Title 40, CFR, 1984 rev, Part 262, Standards Applicable to Generators of Hazardous Waste.

6. Title 40, CFR, 1984 rev, Part 263, Standards Applicable to Transporters of Hazardous Waste.

7. Title 40, CFR, 1984 rev, Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

8. Title 40, CFR, 1984 rev, Part 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

9. Title 40, CFR, 1984 rev, Part 270, EPA Administered Permit Programs: The Hazardous Waste Permit Program.

10. Title 40, CFR, 1984 rev, Part 761, Polychlorinated Biphenyls (PCBs), Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

11. Final Rule, Designation, Reportable Quantities, and Notification, 50 FR 13456, 4 April 1985.

12. Proposed Rule, Notification Requirements for Owners of Underground Storage Tanks, 50 Federal Register (FR) 21772, 28 May 1985.

13. Tennessee Department of Public Health, Division of Solid Waste Management Rules, Chapter 1200 - Hazardous Waste Management, as amended through 1 May 1984.

14. DOD Directive 4160-21-M, change 7, 28 September 1985, Defense Utilization and Disposal Manual.

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15. USAEHA Technical Guide No. 136, April 1984, Hazardous Waste Management.

16. Memorandum for Secretaries of the Military Departments and Director, Defense Logistics Agency, 10 January 1984, subject: Used Solvent Elimination (USE) Program.

17. Letter, DLA-W, Defense Logistics Agency, 12 December 1984, subject: Used Solvent Elimination (USE) Program.

APPENDIX F

SOLID WASTE AUDIT

1. REFERENCES.

a. DLA Regulation 100.27, Solid Waste Management - Collection, Disposal, Resource Recovery and Recycling Program, 26 August 1977.

b. Tennessee Code Title 68, Health and Safety, Chapter 31 - Solid Waste Disposal, as amended.

2. FINDINGS AND DISCUSSION.

a. Solid Waste Management. Although DDMT runs the solid waste program through the FED, there is actually no central authority responsible for implementing the program. The personnel directly responsible for the collection and disposal of wastes and the maintenance of containers are those assigned to the Refuse Section of the Operations and Maintenance Branch. Personnel from the Grounds Section occasionally fill in when the Refuse Section is short-handed. There is no written comprehensive solid waste management plan specifying responsibilities and contingency plans. No SOP's exist for the various activities associated with solid waste handling.

b. Solid Waste Generation.

(1) An accurate annual solid-waste generation rate cannot be estimated for DDMT because the recordkeeping system maintained by the depot is unreliable. Incorrect container volumes have been used for many years to keep an account of volumes disposed at the various disposal sites. The records kept by the depot for refuse disposed at the landfill do not agree with the bills from the landfill. The DDMT records indicate that more than twice as much refuse is taken to the landfill as the landfill records show received. The reason for this is that refuse is taken to the landfill in both compacted and uncompacted form, but the depot records show only the uncompacted amount while the landfill records the actual container volume. For example, the depot fills the 30-cubic yard compactor and takes it to the landfill for disposal. The landfill operator records that 30 cubic yards were received, but DDMT uses a 3 to 1 compaction ratio and lists 90 cubic yards of refuse being disposed. When the depot takes one of the 40-cubic yard loose-bed containers, both the depot and the landfill record 40 cubic yards. Because the depot is charged by the cubic yard for disposal at the landfill, it would be to the depot's advantage to take only compacted waste there.

(2) Table F-1 lists the types of solid waste generated at DDMT. Very little garbage is generated and handled at DDMT for several reasons. The military housing units are equipped with in-sink garbage disposals in the kitchens. The cafeteria contractors in Bldgs 144, 210, and 558 are

responsible for the collection and disposition of all garbage and grease generated from their operations. The small amount of garbage generated at the Golf Course Club/Pro Shop is bagged before being put into a container.

TABLE F-1. TYPES AND DISPOSAL SITES OF SOLID WASTES GENERATED AT DEFENSE DEPOT MEMPHIS, TENNESSEE

Waste Type	Disposal Site
Refuse	Holmes Landfill
rubbish and debris	
incinerator ash	
garbage	
Salvageable	
cardboard	Memphis Paper Company
scrap wood	outside Gate 9
scrap metal	DRMO
computer paper	DRMO
computer cards	DRMO
high-grade paper	DRMO

c. Solid Waste Storage.

(1) All refuse and salvageable waste is temporarily stored in approximately 330 functional containers ranging in size from 24-gallon cans to 45-cubic yard compactors. Table F-2 lists the number, type, location, and usage of the containers. Most of the dumpsters are labeled (i.e., TRASH, METAL, CARDBOARD) for source separation of recyclable and salvageable items. Spot checking of the contents of these labeled containers showed that the source separation method is being followed by the personnel.

(2) Most of the containers are kept clean, free of odor and vectors, and in relatively good condition. Some of the dumpsters in the warehouse area do have rust holes in the bottoms. However, because nearly all of the wastes are dry and too large to fit through the holes, there is no real problem with this situation. Reportedly, the cafeteria personnel occasionally dispose of garbage in the depot-owned dumpsters outside Bldgs 144, 210, and 558. These dumpsters are steam-cleaned every Friday. The container at the Golf Course Club/Pro Shop is also steam-cleaned occasionally to remove any garbage residue from leaky bags.

TABLE F-2. NUMBER, TYPE, USAGE, AND LOCATION OF SOLID WASTE STORAGE EQUIPMENT AT DEFENSE DEPOT MEMPHIS, TENNESSEE

Number	Type	Location and Usage
4	45 yd^3 compactors	Bldg 490, Section 1 - refuse Bldg 690, Section 3 Bldg 649, Section 1 } cardboard Bldg 549, Section 3
2	30 yd^3 compactors	on trucks - various
8	40 yd^3 dumpsters	Bldg 470, Section 2 Bldg 689, Section 1 Bldg 489, Section 1 } cardboard Bldg 359, Section 3 Bldg 670, Section 2 Bldg S972 } refuse Bldg S873 Bldg 770 - unassigned
1	20 yd^3 dumpster	fits on truck for hauling scrap wood
1	14 yd^3 dump truck	for hauling scrap wood
188	6 yd^3 dumpsters	112 for refuse 49 for cardboard 27 for scrap metal
8	4 yd^3 dumpsters	for refuse
4	2 yd^3 dumpsters	housing area - refuse
4	1 yd^3 dumpsters	2 for refuse 2 for scrap metal
30	30-gal concrete containers w/plastic trash can liners	parking lots, around Bldg 144 - refuse
80	24-gal metal containers	scattered through DDMT - refuse

d. Solid Waste Collection

(1) All wastes are collected and transported to the disposal sites in either the 14-cubic yard dump truck, the 20-cubic yard dumpster, one of the 40-cubic yard dumpsters, or one of the 30- or 45-cubic yard front-loading compactors. The vehicles are in adequate working condition. They

are not cleaned on a regular basis due to the usually dry composition of wastes. However, when DRMO has the Refuse section haul expired or damaged subsistence stock on an as-needed basis, the truck is cleaned with a hose after the load has been disposed.

(2) Regular collections are made once a week from the housing area and Bldgs 144, 210, and 558. The 24-gallon containers are emptied every Monday and Friday. All other collections from the warehouse and industrial operations are made on an as-needed basis. No specific route is followed. All vehicles perform constant collection during the workday, and personnel will respond to a telephonic request for collection.

(3) A very good effort is being made to keep records. However, as discussed in section 3b(1), incorrect container volumes are being used. Each day, each operator records on a card form the miles logged and volumes disposed. The volume recorded is the actual container volume for loose-bed dumpsters, but is three times the actual container volume for compactors. This system has been used so consistently that the personnel call the 30-cubic yard compactors 90-cubic yard compactors. At the end of each day, the card forms are turned in to the Chief of Roads, Railroads, Grounds, Entomology and Refuse Sections who totals the types and volumes of waste collected and records the totals on DDMT Form 2426 (Refuse and Salvage Collections). The DDMT Form 2426 is completed monthly and sent to the FED. Annex F-1 is a copy of a typical DDMT Form 2426.

e. Solid Waste Disposal.

(1) Offpost Disposal.

(a) All refuse is transported in the 40-cubic yard loose-bed dumpsters or in the 30- or 45-cubic yard compactors to the Holmes Landfill which is 30 miles southwest of the depot on Malone Road off Shelby Road. The landfill acreage is leased by the City of Memphis from an individual, and BFI Corporation operates the landfill for the city. The landfill is state-permitted (permit number SNL 79-106-0135) and has an estimated 9 years of use left.

(b) Defense Depot Memphis has a contract with the City of Memphis to use the Holmes Landfill. The depot is charged by the cubic yard and billed each month. Approximately $40,000 per year is spent on refuse disposal. Annex F-2 is a copy of a typical quarterly contract with the City of Memphis. Because the charge for disposal at Holmes Landfill is by the cubic yard, DDMT should discontinue using the loose-bed dumpsters for transporting uncompacted waste to the landfill. Only compacted waste should be taken to the landfill, and only the actual compactor volume (30- or 45-cubic yards) should be recorded on the card forms and the DDMT Form 2426.

(2) Onpost Disposal.

(a) The Dunn Field area on the north end of DDMT has been used on and off since the early 1940's for disposal of specific items. Sanitary waste and refuse was never disposed of there on a regular basis. Figure F-1 shows the burial sites and Table F-3 lists the wastes disposed of at each burial site.

(b) The most recent usage of the Dunn Field burial site was during August and September 1984. A DC-3 cargo plane crashed into sections 3 and 4 of Warehouse 550 on 12 August 1984. The fire destroyed the plane and the contents of the two warehouse sections, mostly women's uniforms. A contractor was hired to cleanup and dispose of the plane parts and burnt uniforms in a trench at Dunn Field (marked as burial site 34 on the figure).

f. Recycling Program. The recycling program at DDMT is conducted according to DLA Regulation 1000.27. Table F-1 lists the six types of salvageable materials handled at DDMT.

(1) Cardboard is generated from the warehouse areas and put into labeled dumpsters conveniently located outside the appropriate warehouse sections. Collections are made on an as-needed basis. The cardboard is transported in the 40-cubic yard loose-bed dumpsters or the 30- or 45-cubic yard compactors four to five times per week to the Memphis Paper Company, 15 miles from the depot. The truck is weighed before and after unloading, and the receipt turned in to DRMO which handles the term contract.

(2) Scrap wood, usually broken pallets, is collected in the 20-cubic yard dumpster and the 14-cubic yard dump truck. The wood is hauled to and dumped in the area just outside Gate 9 on the west side of DDMT. The public removes the scrap wood almost as soon as the depot dumps it. This procedure has been used for several years and works quite well for DDMT while providing a service to the surrounding community.

(3) Scrap metal is stored in labeled dumpsters and collected periodically by the Refuse Section for turn-in to DRMO where it is weighed and dumped in a pile in the DRMO yard. Source separation of ferrous and nonferrous metal is not performed, but would probably not be feasible since it would take more effort and resources to maintain.

(4) Computer printout paper, computer cards, and high-grade paper are source separated and stored in Bldg 210. The Refuse Section transfers the paper and cards to DRMO for turn-in whenever the bins are full, approximately every 6 weeks in response to a telephone call from personnel in Bldg 210. According to the OIS, recycling of high-grade paper was attempted at Bldg 144, but did not succeed because personnel became confused about disposal procedures. The method used at that time was the two wastebasket system. The desktop system as described in Section XVIII of Enclosure 1 of DLA Regulation 1000.27 may work better if the decision to implement high-grade paper recycling is made.

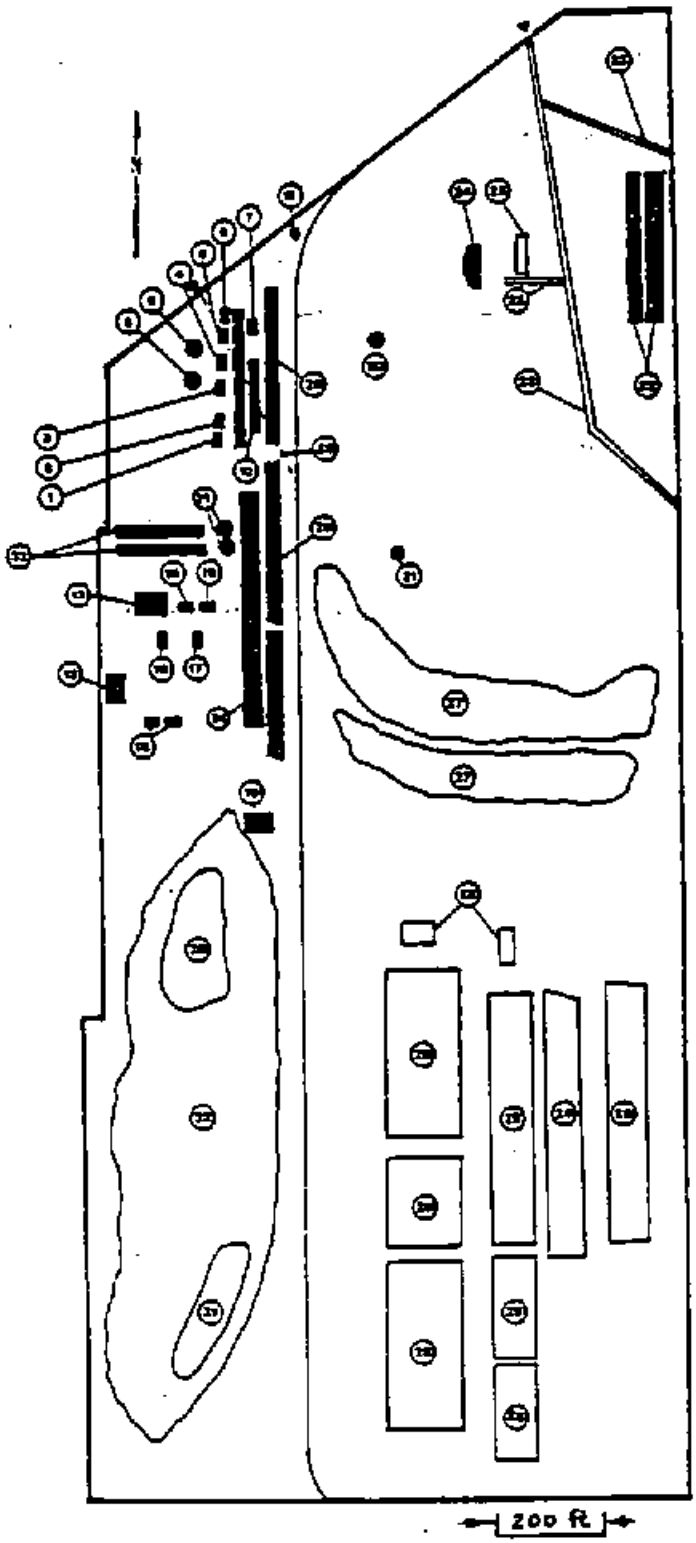

Figure F-1. Burial Sites At Dunn Field.

TABLE F-3. DESCRIPTION OF DUNN FIELD DISPOSAL AND STORAGE SITES

Location	
Burial Sites	
1	Training sets, nine each, mustard and Lewisite, 1955
2	7 pounds (lbs) ammonium hydroxide, 1 gal glacial acetic acid, 1955
3	3,000 quarts (qt) chemicals 5 cubic feet (ft^3) ortho-tolidine dihydrochloride, 1955
4	Thirteen 55-gal drums oil, grease, and paint, date unknown
5	Thirty-two 55-gal drums oil, grease, thinner, 1955
6	3 ft^3 methyl bromide, 1955
7	40,037 units ointment (eye), 1955
8	1,700 bottles fuming nitric acid, 1954
9	3,768 1-gal cans methyl bromide, 1954
10	Ashes and metal refuse from burning pit, 1955
11	1,433 1-ounce (oz) bottles trichloroacetic acid, 1965
12	Sulfuric/hydrochloric acids, 1967
13	32-cubic yards mixed chemicals and acid, 900 lbs detergent, 7,000 lbs aluminum sulphate, 200 lbs sodium
14	Sodium, 1968
15	Sodium phosphate, 1968
16	Acid, 1969
17	Herbicide, cleaning compound, medical supplies, 1969
18	Acid, date unknown
19	Hardware (nuts and bolts)
22	XXCC3 impregnite
29	Food supplies
30	Burial site prior to bauxite storage; foods, construction debris burned; 1948
33	14 burial pits containing sodium phosphate, sodium, acid, medical supplies, chlorinated lime; 1970
34	airplane parts and burn debris, burnt uniforms; 1984
Burn Sites	
21	Sanitary waste, smoke pots, CN containers
31	Old burn area, 1946
Storage Sites	
25	Pesticide storage
27	Bauxite
28	Fluorspar
32	Bauxite, 1942-72
Other Sites	
20	Asphalt dump
23	Open-drain ditches
24	Pistol range
26	Buried drainpipe

ANNEX F-1

DDMT FORM 2426

Environmental Audit No. 43-21-1387-86, DDMT, 8-18 Jul 86

REFUSE AND SALVAGE COLLECTIONS

MONTH: June 85

DATE	MILES OF TRAVEL (1)	OVER-TIME HOURS man/hrs (2)	NUMBER OF TRIPS (3)	CUBIC YARDS OF REFUSE AND SALVAGE DELIVERED TO - INCINERATOR (4)	SANITARY FILL City Dump (5)	Landfill & OTHER DISPOSAL Cont. (6)	TVA Wire C (7)	NUMBER CANS DELIVERED TO - (Transfer Station) Pounds
1	59		2		130			
2								
3	137		10		345		134	
4	133		4		370		20	
5	91		7		320	90	40	3840
6	131		17		330		240	
7	99		4		180	130		3860
8	63		3		130	20		
9								
10	72		9		140	40	98	1700
11	107		10		280		178	
12	115		14		90	115	168	4340
13	80		9		90	115	98	6850
14	167		4		340	40	56	2120
15	56		2		180			
16								
17	192		13		310	130	104	3820
18	131		11		395		118	
19	116	90	12		180		138	
20	193		23		320	115	230	3860
21	179		9		280	250	20	11,940
22	162		2		130			
23								
24	197		14		350		228	
25	176		15		230	112	160	4240
26	154		6		260	115	30	4000
27	54		8		90		59	
28	165		7		170	90	144	2920
29	58		2		180			
30								
31								
TOTAL	2972	90	224		4,330	1,355	2,182	53,400

GRAND TOTAL CUBIC YARDS, INCLUDING CANS (9 Cans = 1 Cu. Yd.) 7957

PREPARED BY	DATE	APPROVED BY	DATE

REMARKS

2, 4, 5, 6, 7

DDMT FORM 2426
NOV 84

ANNEX F-2

QUARTERLY CONTRACT WITH CITY OF MEMPHIS
FOR USE OF LANDFILL

CHECK BOX APPLIES: [X] ORDER FOR SUPPLIES OR SERVICES DJ3 — [ ] REQUEST FOR QUOTATIONS NO. — PAGE 1 OF

1. CONTRACT/PURCH ORDER NO.: DLA00285P1255
2. DELIVERY ORDER NO.:
3. DATE OF ORDER: 02 APR 85
4. REQUISITION/PURCHASE REQUEST NO.: 50813069
5. CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REG 1: DO
6. ISSUED BY: CODE DLHR02
BASE PROCUREMENT DIVISION
DEFENSE IND PLANT EQUIP CTR
MEMPHIS TN 38114-5297
PHONE: (901) 775-6651 Jaynes
7. ADMINISTERED BY: (If other than 6) CODE
8. DELIVERY FOB: [X] DEST [ ] OTHER (See Schedule if other)
9. CONTRACTOR/OFFEROR: CODE 047799 FACILITY CODE
NAME AND ADDRESS
CITY OF MPHS SANITATION SVC
125 N. MAIN ST. ROOM 665
MEMPHIS TN 38103
10. DELIVER TO FOB POINT BY: 30 JUN 85
11. CHECK IF BUSINESS IS: [ ] SMALL [ ] SMALL DISADVANTAGED [ ] WOMEN-OWNED
12. DISCOUNT TERMS: NET 30 DAYS
13. MAIL INVOICES TO: SEE BLOCK 15
14. SHIP TO: CODE N/H
N/H
SEE SCHEDULE
15. PAYMENT WILL BE MADE BY: CODE 540110
ACCOUNTING & FINANCE DIV.
DEFENSE DEPOT MEMPHIS
MEMPHIS TN 38114-5297
MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

16. TYPE OF ORDER: DELIVERY [ ] PURCHASE [X]
This delivery order is subject to instructions contained on this side of form only and is issued subject to the terms and conditions of the above-numbered contract.
Reference your ____ furnish the following on terms specified herein, including, for U.S. purchases,
General Provisions of Purchase Order, DD Form 1155a (EXCEPT CLAUSE NO. 11 APPLIES ONLY IF THIS BOX [ ] IS CHECKED, AND NO. 14 IF THIS BOX [ ]
; and delivery as indicated. This purchase is subject to and governed by
17. CHECK(ED): special provisions
10 USC 2304(a)(17) or as specified in the schedule if within the U.S., its possessions or Puerto Rico; if otherwise under 2304(a)(16).
[ ] If checked, Additional General Provisions apply; Supplier shall sign "Acceptance" on DD Form 1155a and return ____ copies.

17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE
01 9750150 5125 091 P900 2S 540110 9750.00

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICES	20. QUANTITY ORDERED/ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
0001	DOCUMENT NUMBER NSN/MFG-PART-NUM ACC 50813069 SERVICE 9999AAL303059 FURNISH NECESSARY REFUSE DISPOSAL SITE AT CITY OF MEMPHIS LANDFILL DURING - 3RD QUARTER- 1 APR 85 THRU 30 JUN 85 FOR DEFENSE DEPOT MEMPHIS. (DISPOSAL SITE FEE IS $1.46 PER CUBIC YARD) PROMPT PAYMENT-PAYMENT WILL NORMALLY BE MADE WITHIN THIRTY (30) DAYS AFTER RECEIPT OF PROPER INVOICE OR		1 MONTH	3250.00	9750.00

24. TOTAL: 9750.00
25. DIFFERENCES:
26. INITIALS:

*If quantity accepted by the Government is same as quantity ordered, indicate by √ mark. If different, enter actual quantity accepted below quantity ordered and encircle.

27. UNITED STATES OF AMERICA
BY: MARTHA P. GAULT
CONTRACTING/ORDERING OFFICER

28. QUANTITY IN COLUMN 20 HAS BEEN: [ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED
DATE ____ SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

29. SHIP. NO. [ ] PARTIAL [ ] FINAL
30. D.O. VOUCHER NO.
31. PAID BY
32. AMOUNT VERIFIED CORRECT FOR
33. PAYMENT [ ] COMPLETE [ ] PARTIAL [ ] FINAL
34. CHECK NUMBER
35. BILL OF LADING NO.

36. I certify this account is correct and proper for payment.
DATE ____ SIGNATURE AND TITLE OF CERTIFYING OFFICER

37. RECEIVED AT
38. RECEIVED BY
39. DATE RECEIVED
40. TOTAL CONTAINERS
41. S/R ACCOUNT NUMBER
42. S/R VOUCHER NO.

DD FORM 1155 — PREVIOUS EDITIONS ARE OBSOLETE.

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE 2 OF PAGES
	DLA88285P1259	

NAME OF OFFEROR OR CONTRACTOR
CITY OF MPHS SANITATION SVC

ITEM NO.	SUPPLIES / SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
CLIN ACC	DOCUMENT NOUN NSN/MFG-PART-NUM ACCEPTANCE OF SUPPLIES/SERVICES. WHICHEVER IS LATER. ALL INQUIRIES REGARDING PAYMENTS SHALL BE DIRECTED TO THE ACCOUNTING AND FINANCE DIVISION. DEFENSE DEPOT MEMPHIS. MEMPHIS TN 38114-5297 OR PHONE 901-775-6541 (NO COLLECT CALLS). INCLUDE PURCHASE/DELIVERY ORDER NUMBER ON ALL INVOICES. THE ATTACHED CHANGES TO DD FORM 1155R ARE INCORPORATED AND MADE A PART OF THIS ORDER. ALL REFERENCE TO "NEGOTIATED UNDER AUTHORITY OF 10 U.S.C. 2304(A)(3) OR 2304(A)(6)" IN BLOCK 16 IS DELETED. INVOICES (OCT 1982) DOD FAR SUP 52.232-7000				

THIS PARAGRAPH APPLIES ONLY TO QUOTATIONS SUBMITTED:

Supplies are of domestic origin unless otherwise indicated by quoter. The Government reserves the right to consider quotations or modifications thereof received after the date indicated should such action be in the interest of the Government. This is a request for information and quotations furnished are not offers. When quoting, complete blocks 11, 12, 21, 23, 24. If you are unable to quote, please advise. This request does not commit the Government to pay any cost incurred in preparation of the submission of this quotation or to procure or contract for supplies or services.

GENERAL PROVISIONS

1. INSPECTION AND ACCEPTANCE – Inspection and acceptance will be at destination, unless otherwise provided. Until delivery and acceptance, and after any rejections, risk of loss will be on the Contractor unless loss results from negligence of the United States Government. Notwithstanding the requirements for any Government inspection and test contained in specifications applicable to this contract, except where specialized inspections or tests are specified for performance solely by the Government, the contractor shall perform or have performed the inspections and tests required to substantiate that the supplies and services provided under the contract conform to the drawings, specifications and contract requirements listed herein, including if applicable the contract requirements for the supplies/items' post shipment operation hours.

2. VARIATION IN QUANTITY – No variation in the quantity of any item called for by this contract will be accepted unless such variation has been caused by conditions of loading, shipping, or packing, or allowances in manufacturing processes, and then only to the extent, if any, specified elsewhere in this contract.

3. PAYMENTS – Invoices shall be submitted in quadruplicate (one copy shall be marked "Original") unless otherwise specified, and shall contain the following information: Contract or order number, item number, contract description of supplies or services, sizes, quantities, unit prices and extended totals. Bill of lading number and weight of shipment will be shown for shipments on Government Bills of Lading. Unless otherwise specified, payment will be made on partial deliveries accepted by the Government when the amount due on such deliveries so warrants.

4. DISCOUNTS – In connection with any discount offered, time will be computed from date of delivery of the supplies to carrier when acceptance is at the point of origin, or from date of delivery at destination or port of embarkation when delivery and acceptance are at either of these points, or from the date the correct invoice or voucher is received in the office specified by the Government, if the latter is later than date of delivery. Payment is deemed to be made for the purpose of earning the discount on the date of mailing of the Government's check.

5. DISPUTES – *This contract is governed by the Contract Disputes Act of 1978 (Public Law 95-563) (the "Act").* The Act provides administrative procedures for the submittal, analysis, negotiation, and if necessary, litigation of claims arising on this contract. The parties to this contract must comply with certain time restrictions in requesting a contracting officer decision on claims, and on the appeal of those decisions. *Further details on the rights and remedies under the Act may be found in the DAR at 1-324.1.*

6. FOREIGN SUPPLIES – This contract is subject to the Buy American Act *(41 U.S.C. 10a-d)* as implemented by Section VI of the DAR and any restrictions in appropriation acts on the procurement of foreign supplies. The supplies items identify any foreign items to be furnished.

7. CONVICT LABOR – In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1965 *(18 U.S.C. 4082(c)(2))* and Executive Order 11755, December 29, 1973.

8. OFFICIALS NOT TO BENEFIT – No member of or Delegate to Congress or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

9. COVENANT AGAINST CONTINGENT FEES – The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or at its discretion, to deduct from the contract price or consideration or otherwise recover, the full amount of such commission, percentage, brokerage or contingent fee.

10. GRATUITIES – (a) The Government may, by written notice to the Contractor, terminate the right of the Contractor to proceed under this contract if it is found after notice and hearing, by the Secretary or his duly authorized representative, that gratuities (in the form of entertainment, gifts or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the Government with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing of such contract, provided, that the existence of the facts upon which the Secretary or his duly authorized representative makes such findings shall be in issue and may be reviewed in any competent court. (b) In the event this contract is terminated as provided in paragraph (a) hereof the Government shall be entitled (i) to pursue the same remedies against the Contractor as it could pursue in the event of a breach of the contract by the Contractor and (ii) to a penalty in addition to any other damages to which it may be entitled by law in exemplary damages in an amount (as determined by the Secretary or his duly authorized representative) which shall be not less than three nor more than ten times the costs incurred by the Contractor in providing any such gratuities to any such officer or employee. (c) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

11. CONDITION FOR ASSIGNMENT – This Purchase Order may not be assigned pursuant to the Assignments of Claims Act of 1940, as amended *(31 U.S.C. 203, 41 U.S.C. 15)*, unless or until the supplier has been requested and has accepted this order by executing the Acceptance hereof.

12. COMMERCIAL WARRANTY – The Contractor agrees that the supplies or services furnished under this contract shall be covered by the most favorable commercial warranties the Contractor gives to any customer for such supplies or services and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the Government by any other clause of this contract.

13. PRIORITIES, ALLOCATIONS, AND ALLOTMENTS – The Contractor shall follow the provisions of DMS Reg. 1, or DPS Reg. 1 and all other applicable regulations and orders of the Bureau of Domestic Commerce in obtaining controlled materials and other products and materials needed to fill this order.

14. FAST PAYMENT PROCEDURE –

(a) General. This is a fast payment order. Invoices will be paid on the basis of the Contractor's delivery to a post office, common carrier, or, in shipment by other means, to the point of first receipt by the Government.

(b) Responsibility for Supplies. Title to the supplies shall vest in the Government upon delivery to a post office or common carrier for addressee to the specified destination. If shipment is by means other than post office or common carrier, title to the supplies shall vest in the Government upon delivery to the point of first receipt by the Government. Notwithstanding any other provisions of the purchase order, the Contractor shall assume all responsibility and risk of loss for supplies (i) not received at destination, (ii) damaged in transit, or (iii) not conforming to purchase requirements. The Contractor shall either replace, repair, or correct such supplies promptly at his expense, provided instructions to do so are furnished by the Contracting Officer within ninety (90) days from the date title to the supplies vests in the Government. (180 days for overseas shipments.)

(c) Presentation of Invoices.

(1) Upon delivery of supplies to a post office, common carrier, or in shipments by other means, the point of first receipt by the Government, the Contractor shall prepare an invoice in accordance with Clause 3 of the General Provisions of Purchase Order, except that invoices under a blanket purchase agreement shall be prepared in accordance with the provisions of the agreement. All invoices shall also be conspicuously marked "Fast Pay."

(2) If the purchase price includes the cost of transportation, the Contractor shall show the prepaid shipping cost on the invoice as a separate item. The cost of parcel post shipments will not be paid by the Government. If transportation charges are mandatory stated on the invoice, the Contractor agrees to furnish prepaid freight bills or other transportation billings paid immediately (or a period of three (3) years and to furnish such bills to the Government when requested for audit purposes.

(3) In the event this order requires the preparation of a Material Inspection and Receiving Report (DD Form 250), the Contractor has the option of either preparing the DD Form 250 or furnishing the following information on the invoice, in addition to that required in (c)(1) above: (A) a statement in prominent letters "NO DD 250 PREPARED"; (B) shipment number; (C) name of shipper; and (D) at the appropriate level, (i) National Stock Number and/or Manufacturer's part number, (ii) unit of issue, (iii) Ship-To-Point, (iv) Mark-For-Point if in contract, and (v) MILSTRIP document number if in contract. When a DD Form 250 is not required, the invoice will include the following information: (i) Ship-To-Point, (ii) Mark-For-Point and MILSTRIP document number if in contract, as well as the information in (c)(1) above. In all cases where no DD Form 250 is prepared, a copy of the invoice will be included in each shipment.

(d) Certification of Invoice. The Contractor agrees that the submission of an invoice-to-the-Government for payment is a certification that the supplies for which the Government is being billed have been shipped or delivered in accordance with shipping instructions issued by the ordering office, in the quantities shown on the invoice, and that such supplies are in the quantity and of the quality designated by the cited purchase order.

OUTER SHIPPING CONTAINERS SHALL BE MARKED "FAST PAY"

15. *(This clause applies if this contract is for services and is not exempted by applicable regulations of the Department of Labor.)*

SERVICE CONTRACT ACT OF 1965 – Except to the extent that an exemption, variation or tolerance would apply pursuant to 29 CFR 4.6 if this were a contract in excess of $2,500, the Contractor and any subcontractor hereunder shall pay all of his employees engaged in performing work on the contract not less than the minimum wage specified under section 6(a)(1) of the Fair Labor Standards Act of 1938, as amended (overtime exemptions apply). However, in cases where section 6 (a)(3) of the Fair Labor Standards Act of 1938 is applicable, the rates specified therein will apply. All regulations and interpretations of the Service Contract Act of 1965 expressed in 29 CFR Part 4 are hereby incorporated by reference in this contract.

ADDITIONAL GENERAL PROVISIONS

16. CHANGES – The Contracting Officer may at any time, by a written order, and without notice to the sureties, make changes, within the general scope of this contract, in (i) drawings, designs, or specifications, where the supplies to be furnished are to be specially manufactured for the Government in accordance therewith; (ii) method of shipment or packing; and (iii) place of delivery. If any such change causes an increase or decrease in the cost of, or the time required for performance of this contract, whether changed or not changed by any such order, an equitable adjustment shall be made by written modification of this contract. Any claim by the Contractor for adjustment under this clause must be asserted within 30 days from the date of receipt by the Contractor of the notification of change; provided that the Contracting Officer, if he decides that the facts justify such action, may receive and act upon any such claim asserted prior to final payment under this contract. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes." However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

17. TERMINATION FOR DEFAULT – The Contracting Officer, by written notice, may terminate this contract, in whole or in part, for failure of the Contractor to perform any of the provisions hereof. In such event, the Contractor shall be liable for damages, including the excess cost of reprocuring similar supplies or services provided that, if (i) it is determined for any reason that the Contractor was not in default or (ii) the Contractor's failure to perform is without his and his subcontractor's control, fault or negligence, the termination shall be deemed to be a termination for convenience under paragraph 18. As used in this provision the term "subcontractor" and "subcontract" means subcontractor at any tier.

18. TERMINATION FOR CONVENIENCE – The Contracting Officer, by written notice, may terminate this contract, in whole or in part, when it is in the best interest of the Government. If this contract is for supplies and is so terminated, the Contractor shall be compensated in accordance with Section VIII of the Defense Acquisition Regulation in effect on the contract's date. To the extent that this contract is for services and is so terminated, the Government shall be liable only for payment in accordance with the payment provisions of the contract for services rendered prior to the effective date of termination.

19. ASSIGNMENT OF CLAIMS – Claims for monies due or to become due under this contract may be assigned only pursuant to the Assignment of Claims Act of 1940, as amended *(31 U.S.C. 203, 41 U.S.C. 15)*. However, payments to an assignee of monies under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or set-off *(See Clause 11)*.

ACCEPTANCE

THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED

DD FORM 1155r 92 SEP — PREVIOUS EDITIONS ARE OBSOLETE.

APPENDIX G

WATER QUALITY COMPLIANCE AUDIT

1. REFERENCES. See Annex G-1.

2. POTABLE/RECREATIONAL WATERS.

a. Potable Water.

(1) Evaluative Criteria. Regulatory criteria considered in evaluating compliance with potable water-related matters originated with the Safe Drinking Water Act of 1974 (PL 93-523). This Act resulted in the establishment of the NIPDWR, or primary (health related) drinking water standards (reference 2) and the NSDWR, or secondary (aesthetic) drinking water standards (reference 3) for public water systems. The State of Tennessee, as a consequence of acquiring primacy on 30 September 1977, has in effect its own rules concerning drinking wate quality and operation and maintenance aspects of water systems (reference 4). These regulations are not applicable to DDMT since the installation is simply a consumer in the public (community) water system operated by the MLGWD. However, a local cross-connection control and backflow prevention program defined in the Memphis and Shelby County Cross Connection Board (MSCCCB) Manual (reference 5), mandated by the Tennessee rules, does apply to a degree. Discussion of DDMT's cross connection control activities is contained in paragraph 1a(5). Other criteria used were conformance with good environmental engineering practice.

(2) Water Supply.

(a) The MLGWD, a publicly-owned utility of the City of Memphis, which sells potable water to DDMT, derives adequate groundwater supplies from the "500-foot sand" (or Memphis Acquifer) via numerous well-fields. The "1,400-foot sand" source is primarily reserved for future use. Treatment consists of aeration, filtration, chlorination, fluoridation and addition of sodium hexametaphosphate for corrosion control. Overall quality of the soft finished water, which fully conforms to Tennessee drinking water standards, is shown in Annex G-2.

(b) The DDMT receives potable water via 3-metered, 10-inch connections on the northern, eastern, and western installation boundaries shown on the FED "Water Distribution System" Drawing No. 11-15 dated 28 June 1960. Further treatment to the purchased water is not provided by DDMT. The installation water distribution system consists of 172 hydrants and a total of 110,066 feet of water lines. The majority of 82,694 feet consists of distribution lines ranging from 3 to 10 inches in diameter. The balance of 27,372 feet is small diameter piping (1/2-2 1/2 inch) within plumbing systems. Normal system pressures average about 50 psi. Severe pressure drops have not been reported to occur. An advantageous factor in this respect is the multiple connection points to the MLGWD distribution

system. A water storage tank (Structure 754) with an associated pumping station (Bldg 753) is reserved for fire protection. A large sprinkling system serves the golf course area; a small sprinkling system is located at the headquarters area (Bldg 144). Both systems utilize potable water when operational. FY 84 purchased water records indicate an average consumption of 119,542 gpd. The resulting average per capita usage, based upon an effective population of 915 (23 residents plus 1/3 x appropriately 2,677 nonresidents), is 131 gpd. This usage is below the 150 gpd allowance used by the Army and Air Force (reference 7).

(3) Bacteriological Surveillance. The nearest potable water bacteriological sampling point to DDMT maintained by MLGWD is the fire station at 1048 E. Parkway. It is prudent that the Health Clinic has established an effective bacteriological monitoring program at DDMT. This program, in effect since June 1985, utilizes four sampling locations throughout the DDMT system, each of which is sampled once monthly on a rotating basis. Free available chlorine and pH measurements are made when samples are collected. Total coliform analyses are performed by a state laboratory in Memphis. Negative total coliform results have confirmed the safety of drinking water from a bacteriological perspective.

(4) Water System Operational Practices. Systematic annual flushing of the DDMT distribution system is conducted by Operations and Maintenance Branch (OMB) personnel according to an established procedure. Fire inspection personnel conduct fire flow testing of hydrants. Discolored water and excessive water line breaks are not considered a problem. Disinfection of mains by OMB personnel is only accomplished when depressurized segments longer than a few feet are repaired or replaced. Smaller segments are not disinfected. Bacteriological (total coliform) analyses should be conducted before disinfected segments are returned to service. Arrangements for this testing can be made with the Health Clinic. Excellent guidance concerning disinfection of mains is contained in AWWA Standard C601-81 (reference 8), a copy of which was left with OMB personnel. Specifications for new water lines and plumbing installed under contract require appropriate disinfection including bacteriological testing.

(5) Cross Connection Control and Backflow Prevention. The Office of Installation Services (OIS) places good emphasis upon cross-connection control and backflow prevention. Reduced pressure backflow preventers are installed on each of the installation water-supply connections to prevent contamination of the MLGWD distribution system as required by the MSCCCB. Likewise, various devices are reportedly in place within DDMT, in accordance with MSCCCB requirements, to provide appropriate protection therein as a result of an inspection by a representative from the MSCCCB in July 1983 (reference 9). Testing of many installed devices is conducted by a trained OMB individual per MSCCCB requirements and is reflected on the proper CCB forms (see Annex G-3 for a typical report). Whether or not all appropriate devices within the DDMT system are in fact tested on a desirable annual basis could not be readily ascertained. The Health Clinic does conduct

some cross-connection inspections, but only in the course of performing other duties. A concerted formal program within OIS, designed to ensure that proper devices are installed in all necessary locations, routinely inspected, tested annually where appropriate, and coordinated with the Health Clinic, is desirable. This desirability is based on the significant size of the DDMT water system even though DDMT is regarded only as a consumer from a regulatory perspective. The MSCCCB manual (reference 5) is a good source document in this respect.

b. Recreational Waters. Bathing opportunities during the Memorial - Labor Day swimming season exist at the outdoor swimming facilities adjacent to Bldg 163. These facilities consist of a 84,650-gallon pool and a wading pool. The pools are of the recirculation variety. Turnovers are adequate, occurring at least three times daily. Treatment includes filtration via cartridge filters. These filters are washed manually using a hose every 2 weeks; the small suspended solids discharge is to a storm drain. Also, continuous chlorination, using stabilized chlorine tablets in a solution-izer, is provided to maintain chlorine residuals in the range of 1.0 to 1.5 mg/L. The pH is maintained between 7.2 to 7.6 units using soda ash or muriatic acid for pH adjustment as necessary. Frequent chlorine residual and pH measurements are made and properly recorded. Weekly bacteriological surveillance at three locations (shallow and deep ends of the swimming pool and in the wading pool) is conducted by the Health Clinic. Overall, operational and maintenance practices, executed in accordance with written procedures, are extremely good. Adequate safety provisions are in effect. An excellent working relationship exists among the life guard, OMB and the Health Clinic in assuring a safe and pleasant bathing environment.

3. WASTEWATER-RELATED ISSUES. Criteria used in evaluating wastewater-related matters were based upon the Clean Water Act of 1972 (PL 92-500) with subsequent amendments. Specific aspects considered in relation to this Act were in compliance with 40 CFR 109, 110, 112, 117, 122, 264, and 300, (references 11-18, respectively) and DLAR 1000.17 (reference 19). The other evaluative criteria used were DLA policy concerning SPCCPs (reference 23) and PL 98-616, Subtitle I, Hazardous and Solid Waste Amendments of 1984 to RCRA (reference 24).

a. Wastewater. Discharges of wastewaters to the DDMT sewage collection system consist essentially of sanitary sewage. Limited industrial wastewaters discharges are batches of cooling water from two cooling water towers when cleaned every October and effluent from two oil and grease separators at Bldgs 253 and 770. The DDMT gravity sewage system, which is comprised of 38,926 feet of 4- to 12-inch diameter sewers and 160 manholes, conveys flows to the City of Memphis sewerage system. Secondary (activated sludge) treatment for that portion of City of Memphis wastewaters which includes DDMT contributions is provided at the City's Thomas E. Maxson Wastewater Treatment Facility. Discharges to the municipal system by DDMT are governed by a sewer use agreement (Permit No. S-NN3-013 with the City of Memphis dated 20 December 1984 covering the period 1 January 1985 to 1 January 1990) (reference 20). No monitoring by DDMT is required under this agreement. Wastewater flows, which are not metered, are based upon a percentage of water consumed for billing purposes.

b. NPDES Permit Considerations.

(1) NPDES Permit. One NPDES permit (No. TN 0022322, effective 12 March 1982 through 11 March 1987), issued by EPA Region IV, is in force at DDMT. This permit authorizes releases of industrial-type wastewaters to storm drains or open ditches at eight discharge monitoring points. Installation operations covered under the permit include cooling water and boiler blowdown waters. Also covered is surface runoff from various storage, including petroleum product areas and the outflow from Lake Danielson, a fire supply reservoir through which some storm drainage is routed. Not covered is the intermittent swimming pool filter cartridge washwater discharged to a storm drain (discussed earlier in paragraph 1b) which leaves the installation. The EPA regulatory authority should be contacted to determine if this discharge should be included in the NPDES permit. If required to be permitted, a possibility may exist for connection to a nearby sanitary sewer to eliminate inclusion in the permit.

(2) NPDES Monitoring. Development of required NPDES data- i.e., sampling, analysis, and preparation of reporting forms- is conducted under contract with A & L Environmental Services, 411 North Third Street, Memphis, Tennessee for FY 85. The contractor sends completed reports to OIS for submission to the EPA.

(3) Past NPDES Problems. A review of NPDES reports and associated correspondence for the last 3 years revealed two problems had existed. One problem concerned EPA's nonreceipt of reports for the 1st quarter of FY 85 within the scheduled time-frame. This was due to the contractor monitoring not being accomplished soon enough resulting from an administrative delay at DDMT. Procurement moved the monitoring period to terminate at the end of the FY, leaving the 1st quarter of FY 85 unmonitored. Necessary monitoring was quickly arranged under a new contract [the current one noted in paragraph 2b(2)]. Even though this problem presented no further difficulty with EPA, it could have been averted if environmental management responsibilities were centralized at DDMT. The other problem involved exceedance of the oil and grease limitation (15 mg/L) at discharge monitoring points (DMP's) 005 and 007 (storm drains) with respective measured values of 21 and 19 mg/L during the 4th quarter of CY 82. The DMP 005 is at a location which receives storm water runoff from an area consisting of paved streets and warehouses. Likewise, DMP 007 reflects runoff from paved streets and warehouses, and also from a large open storage area surfaced with camden gravel at PDO. Reasons for the oil and grease exceedances could not be specifically identified. At DMP 007 it is believed construction and maintenance activities to upgrade the open storage area may have been a factor. Future noncompliances at this point were not expected. Reporting via letter was provided to the EPA.

c. Spill Prevention and Control Issues.

(1) SPCCP. The DDMT has a SPCCP dated May 1983 which is certified by a registered professional engineer, as mandated by 40 CFR 112. The SPCCP is comprehensive, but is not current. Stipulated key personnel

(On-Scene Coordinators) are no longer at DDMT. Plan amendment is required from a regulatory perspective "whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's....spill potential." Several changes have occurred in this respect, primarily related to inclusion/deletion of potential spill sites, as shown in Annex G-4, and require reflection in the plan. Even though some spill prevention/control related precautions delineated in the SPCCP were being taken, others, not all of which were defined in the SPCCP, were found to be lacking. Deficiencies noted, many of which relate to proper operation and maintenance, are contained in Annex G-5. Numerous spills/leaks which were not addressed until identified by the audit team are reflected in Annex G-6. Specific mention is made of a practical approach in addressing the minor leaks from the numerous POL drums in the X-13/X-15 area (Site 6)- i.e., ensure bungs on leaking drums are tightened and all leaking drums are wiped to remove oil stains to ascertain any defects followed by recoupment. Cleanup/corrective actions were initiated in several cases during the audit as noted in Annex F-6.

(2) Improvement Projects. Protection against spills of hazardous substances is a DLA policy (reference 23). Improved spill prevention and control, particularly with respect to recoupment/storage activities associated with Building 873 (Site 5) and storage at the X-13/X-15 area (Site 6), will be accomplished via two MILCON projects now underway. The HM Warehouse project will provide adequate covered storage to eliminate all outside storage of HM, and the Recoupment Facility Project will provide improved recoupment capabilities for HM's on a year-round basis (reference 21). These projects are in approximately the 40 and 10 percent design stages, respectively.

(3) UG Tanks. A listing of underground storage tanks, based upon information made available during the audit, is presented in Annex G-7. This listing may not reflect all current underground tanks due to relatively recent construction projects. Also, verification of all information in this listing should be provided by DDMT. An updated, accurate inventory of all underground storage tanks is required IAW recent amendments to RCRA (reference 24). The program identified in the SPCCP to provide hydrostatic testing of all underground storage tanks was not undertaken. Under this program each tank was scheduled for testing every 3 years. Several methods exist for testing UG tanks and are undergoing evaluation by the EPA. However, no method(s) has (have) been identified as the most appropriate from a regulatory perspective by the EPA as yet. Further information concerning available testing procedures is available from the Water Quality Engineering Division of this Agency.

(4) ISCP. A ISCP dated October 1982 exists in accordance with 40 CFR 109, 264, and 300. This plan also is not up-to-date. Key personnel (OSC and AOSC) no longer are at DDMT. The list of HM's and associated reportable quantities has been superseded by information contained in Table 302.4, reference 22. Required training of personnel involved in spill responses appears to be provided. Within the last year, at least five

appropriate training courses were attended "in-house", and six training experiences were had away from DDMT, the most recent being the week-long 7th International Hazardous Material Leak, Spill and Fire Control School and Expo! Efforts should continue for new personnel involved in spill response to receive sufficient appropriate training as soon as possible. Annual spill drills continue to be conducted and evaluated by representatives from this Agency. The next such drill is scheduled during August 1985. Any outside assistance that may be required for spill response from the Memphis Fire Department Hazardous Spill React Team and local, State, and EPA authorities is provided for in the ISCP.

(5) Spill Response. Response to spills which were reported to the audit team--at least eight within the past year which included those occurring on vehicles (transporting HM under Army contract) directed to DDMT for assistance--was immediate. Truly effective response in all cases is predicated upon full conformance with an updated ISCP by properly trained personnel. To improve spill response capability, additional equipment (e.g., complete chemical suits and additional self-contained breathing apparatus) and a vehicle to replace the existing OIS spill response trailer is being procured.

ANNEX G-1

REFERENCES

1. Public Law (PL) 93-523, 17 December 1974, Safe Drinking Water Act of 1974.

2. Title 40, Code of Federal Regulations (CFR), 1984 rev, Part 141, National Interim Primary Drinking Water Regulations.

3. Title 40, CFR, 1984 rev, Part 143, National Secondary Drinking Water Regulations.

4. Rules of Tennessee Department of Health and Environment, Division of Water Management, Chapter 1200-5-1, Public Water System, 1983.

5. Cross Connections - Backflow Prevention Control Program Manual, Cross Connection Board, Memphis and Shelby County, undated.

6. Memphis Water brochure, MLGWO, undated.

7. TM 5-813-1/AFM 88-10, Interim Use Draft, Water Supply Sources and General Considerations.

8. AWWA C601-81, Standard for Disinfecting Water Mains.

9. Letter, Cross Connection Board, Memphis and Shelby County, 7 July 1983, concerning cross connection inspection.

10. PL 92-500, 18 October 1972, Federal Water Pollution Control Act Amendments of 1972, as amended by PL 95-217, 27 December 1977, Clean Water Act of 1977.

11. Title 40, CFR, 1984 rev, Part 109, Criteria for State, Local, and Regional Oil Removal Contingency Plans.

12. Title 40, CFR, 1984 rev, Part 110, Discharge of Oil.

13. Title 40, CFR, 1984 rev, Part 112, Oil Pollution Prevention.

14. Title 40, CFR, 1984 rev, Part 117, Determination of Reportable Quantities for Hazardous Substances.

15. Title 40, CFR, 1984 rev, Part 122, The National Pollutant Discharge Elimination System.

16. Title 40, CFR, 1984 rev, Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

17. Title 40, CFR, 1984 rev, Part 300, National Oil and Hazardous Substances Contingency Plan.

18. Title 40, 1984 rev, CFR, Part 300, National Oil and Hazardous Substances Contingency Plan, Subpart F, Hazardous Substance Response.

19. DLAR 1000.17, 1 July 1977, Protection and Enhancement of Environmental Quality.

20. System Discharge Agreement Between City of Memphis and Defense Depot Memphis, 20 December 1984, Permit No. S-NN3-013.

21. Draft Environmental Assessment for Hazardous Materials Mission Expansion, Pheonix Environmental Consultants, Inc., November 1983.

22. 50 FR 13456, Notification Requirements; Reportable Quantity Adjustments, Final Rule, 4 April 1985.

23. Letter, DLA-W, 4 April 1980, subject: Spill Prevention Control and Countermeasure (SPCC) Plans.

24. PL 98-616, 8 November 1984, Hazardous and Solid Waste Amendments of 1984 to RCRA.

ANNEX G-2

MEMPHIS LIGHT, GAS AND WATER DIVISION POTABLE WATER QUALITY DATA 1980/1984

Parameter	MLGWD Finished Water Average	Drinking Water Standard
NIPDWR		NIPDWR
Inorganics		
Arsenic	<0.005	0.05
Barium	<0.10	1.0
Cadmium	<0.001	0.010
Chromium	<0.001	0.05
Lead	<0.005	0.05
Mercury	<0.001	0.002
Selenium	<0.005	0.01
Silver	<0.001	0.05
Sodium	8.3	-
Fluoride	0.98	2.2
Nitrate, as N	<0.23	10
Organics		
Endrin*	ND	0.0002
Lindane*	ND	0.004
Methoxychlor*	ND	0.1
Toxaphene*	ND	0.005
2,4,5-TP (Silvex)*	ND	0.01
2,4-D*	ND	0.1
TTHM	<0.005	0.10
TTHMFP	<0.020	-
Turbidity, NTU	0.06	1.0
Coliform Bacteria, no/100 mL	<1.0	<1.0

All values in mg/L except as noted.
* 1980 data; all other values measured in 1984

Parameter	MLGWD Finished Water Average	Drinking Water Standard
Radiological†		
Gross Alpha	ND	15
Gross Beta	7.8	50
Strontium 90	NA	8
Tritium	NA	20,000
Radium 226 & 228	NA	5
NSDWR		NSDWR
Chloride	5.2	250
Color, units	<5	15
Copper	0.05	1
Foaming Agents	<0.1	0.5
Iron	0.02	0.3
Manganese	<0.01	0.05
Odor, TON	0	3
pH, units	7.2	6.5-8.5
Sulfate	3.3	250
Total Dissolved Solids	90.1	500
Zinc	0.10	5
Other		Other
Alkalinity, as $CaCO_3$	55.3	-
Hardness, as $CaCO_3$	47.4	-
Calcium, as $CaCO_3$	26.9	-
Magnesium, as $CaCO_3$	20.5	
Temperature, °F	64	-
Potassium	0.9	-
Phosphate, as PO_4	0.8	-
Silica	13.8	-
Total Organic Carbon	<5.0	-
Cyanide	<0.01	
Strontium*	0.033	-
Tellurium*	ND	-
Titanium*	ND	-
Thallium*	ND	-
Vanadium*	ND	-
Yittrium*	ND	-
Zirconium*	ND	-
Priority Pollutants*	ND	-

All values in mg/L except as noted.
* 1980 data; all other values measured in 1984
† pico curies per liter

Form 31036 (Rev. 2-82) Test and Maintenance Report - Backflow Prevention Device

Firm Name DEFENSE DEPOT MEMPHIS Address 2163 AIRWAYS Bldg. 38114

Type Device WATTS (Manufacturer) 909 (Model No.) 1" (Size) NO TAG ON DEVICE (Serial No.)

Location Bldg #229 BOILER ROOM (Where located on premises) Water Meter No. N/A

	Check Valve No. 1	Check Valve No. 2	Differential Pressure Relief Valve
Initial Test	Closed Tight (✓) Leaked ( )	Closed Tight (✓) Leaked ( )	Opened at 2.5 PSI Differential Pressure
Describe Repairs and List Materials Used	*(REAMED #1 CHECK VALVE)	*(REPLACED #2 CHECK VALVE)	
Final Test	Closed Tight ( )	Closed Tight ( )	Opened at ____ PSI Differential Pressure

If tests are not performed by a certified tester - Results will be considered invalid. Certificate No. ??

Plumbing Permit No. (New Installations Only) NA Date of Final Test 8-17-83

Beginning Time 8:25 Ending Time 8:35 Total Time Out of Service 10 MIN

I hereby certify the foregoing information to be correct and an original form is being sent to the consumer for completion.

DEFENSE DEPOT MEMPHIS (Firm of Tester) — D. A. Q. Gayhart (Signature of Tester) — 775-6585 (Phone No.)

THE ABOVE TO BE COMPLETED BY TESTER

Consumer - Please complete this portion of form and mail to:

Cross Connection Representative
Memphis Light, Gas and Water Div.
P.O. Box 430
Memphis, Tennessee 38101

I hereby certify this device has been in constant use at this location and was not by-passed, made inoperative or removed without authorization during the previous 12 months. All defects found during the operation period or during tests of the device were satisfactorily corrected.

D. A. Q. Gayhart (Signature of consumer or authorized employee) — DISPATCHER (Title) — 8-24-83 (Date) — 775-6685 (Phone)

*(DEVICE OUT OF SERVICE AT TIME OF REPAIRS - TEST MADE AFTER INSTALLATION OF UNIT)

G-3-1

ANNEX G-3

Environmental Audit No. 43-21-1387-86, ODMT, 8-18 Jul 85

ANNEX G-4

CHANGES AFFECTING SPILL POTENTIAL TO BE REFLECTED IN SPCCP

Site No.	Changes
1	Include open storage non-hardstand area at DRMO if to be used for POL/hazardous material storage prior to disposal. Approximately 80 to 100 55-gallon drums (4,400 - 5,500 gallons) of waste oil were temporarily stored here; waste oil normally is intended to be placed into the 1,000-gallon tank at Bldg 770 prior to contractor removal.
3	Delete since Bldg 1086 is no longer used for additional POL storage/handling.
4	Update to show storage tanks in current use (e.g., service station upgrade project near Bldg 253 resulted in elimination of an underground MOGAS tank).
5	Include present recoupment operations concerning POL/HM occurring in Bldg 873. Improved containment devices/ equipment such as use of sandbags/drip pans to prevent spillage through entranceways to nearby storm drains from the immediate recoupment area must be addressed.
10	Delete old pesticide storage facility at Bldg 267 since it has been replaced by the new facility near Bldg 737. Include new pesticide facility.
6/7	Locations and descriptions of these two sites, which were reversed, must be corrected.

ANNEX G-5

SPILL PREVENTION/CONTROL DEFICIENCIES

Site 1 - The 6-inch drain assembly on the DPDO concrete hardstand outdoor storage containment structure could be unintentionally put into the "down" or open position; installation and use of a lock would preclude this possibility. An excellent log for release of rainwater was being maintained. Some safety equipment was not maintained in a ready-use status (i.e., portable eye-wash units-- one was depressurized, another had no washing water).

Site 2 - Expansion joints in the floor slab of Bldg 308 at DPDO where many classes of HM's are stored prior to disposal were not entirely filled and had cracks. The lip on the south entranceway was not uniform for sufficient containment.

Site 4 - Timely inspections of all fire extinguishers which are generally conducted monthly, were not performed (e.g., one extinguisher at the bulk MOGAS unloading point had not been checked for several months). The drain assembly at the Bldg 720 12,000-gallon diesel fuel containment structure was found in the open position; a lock would assist in preventing this undesirable condition.

Site 5 - Even though visual weekly monitoring of the open storage area adjacent to Bldg 873 where POL/HM's are stored was reportedly conducted, inspection records were not maintained for documentation and any required corrective action purposes.

Site 7 - In the "hot house" area of Bldg 689 where various types and amounts of HM's await outloading, painting of stripes on the floor to allow better segregation of incompatible materials is prudent, the adequacy of all spill response kits was not a certainty, some cracks existed in floor construction joints, and a large, properly placed notification sign providing information for reporting large spills and seeking assistance was not displayed.

Site 8 - The drainage assembly for the open storage concrete containment structure for bulk flammables in X-25 area was not secured with a lock to prevent unauthorized operation; considerable sediment had accumulated upstream which could eventually interfere with proper drain operation. Weekly inspection records were not maintained.

Site 11 - While no deficiencies were observed in Bldg 629, Chemical Storage, where large volumes of various hazardous substances are stored, particular attention should be focused on ensuring segregation of incompatible materials in the staging area destined for recoupment.

ANNEX G-6

OBSERVED SPILLS/LEAKS AT DDMT

Site 1 - Some spillage from the 80 to 100 waste-oil 55-gallon drums was evident in the DPDO open storage area.

Site 4 - A substantial MOGAS leak (intermittent stream) was found in the unloading valve pit at the Bldg 253 upgraded MOGAS station; immediate corrective action was taken.

Site 5 - Numerous minor leaks from POL containers existed throughout Bldg 873 resulting from poor housekeeping practices. Reportedly, corrective actions were underway. Severe leakage from many of the 360 5-gallon containers of a carbon-removing compound in the open storage area adjacent to Bldg 873 had saturated the ground. Recoupment was begun during the audit in response to the audit teams' direction. About 10 percent of the estimated 1,000 lube-oil drums in the same open storage area had developed minor leaks. No corrective action had been taken since, reportedly, litigation is in progress at the DLA level regarding the integrity of the original drums. A significant spill of lube oil (approximately 4 feet x 20 feet in area) occurred in an adjacent area; cleanup was initiated about a day later.

Site 7 - In the X-13/X-15 bulk POL open storage gravel hardstoned area approximately 4 percent of about 1,200 55-gallon POL drums in seven groupings, each group having 150-200 drums side-stacked "3 high" in double rows, experienced minor leaks. Leaks resulted from loose bungs and/or at drums seams during handling. Practical, prompt corrective measures which can be taken, in light of the numerous stored drums, are to ensure that all loose bungs are tightened and to wipe off POL stains with a rag to identify any defective drums. Any defective drums would have to be removed (a maximum of six to access a drum on the bottom row with chocking of adjacent drums) and recouped. If defective drums result from the "3 high" storage, storage height would need to reduced to no more than "2 high". Substantial expanded storage may be planned for this area. Upright single-height storage of drums with plastic end caps to protect against rusting ends due to precipitation may not be as practical because of the large present, and perhaps projected, volume of drums and the difficulty in keeping end caps in place. Likewise, palletized storage with eight drums per pallet may not be as feasible due to the large number of pallets which would be required. Also, in the same storage area, drums of flammable materials (e.g., solvent) developed pin-hole leaks due to heat expansion which volatized before reaching the ground. During weekly inspections these "leakers" were turned so as to place the hole in the topmost position before recoupment could be undertaken.

ANNEX G-7

INVENTORY OF UNDERGROUND STORAGE TANKS

Location Bldg No.	Substance Stored	Capacity gallons	Date of Installation	Usage	Material of Construction	Lining, Interior/ Exterior	Cathodic Protection
209	No. 6 fuel oil	12,000	07/12/1942	Out of service	Steel/concrete	Tar	None
253	No. 2 fuel oil	5,000	11/07/1963	Heating of fuel	Steel	Tar	None
251	Gasoline	1,100	10/02/1944	Weekend vehicle refueling	-	-	-
257	Gasoline	2,500	1985	Transfer tanks	-	-	-
257	Gasoline	18,000	1985	Vehicle refueling	-	-	-
257	Gasoline	20,000	1985	Vehicle refueling	-	-	-
319	No. 2 fuel oil	4,000	07/19/1979	Vehicle refueling	Steel	Unknown	Unknown
359	No. 2 fuel oil	12,000	10/27/1942	Out of service	Steel/concrete	Tar	None
359	No. 2 fuel oil	880	10/19/1942	Out of service	Steel	Tar	None
359	No. 2 fuel oil	880	10/19/1942	Out of service	Steel	Tar	None
754	Gasoline	200	1956	-	-	-	-
737	Pesticide	1,000	06/30/1984	Pesticide rinse water	Concrete	Tar	Unknown
770	Used motor oil	1,000	06/18/1983	Waste oil	Steel	Tar	-
770	No. 2 fuel oil	10,000	01/17/1963	Heating fuel	Steel	Tar	-
770	Used motor oil	1,000	06/18/1953	Used motor oil	Steel	None	None
770	Gasoline	400	11/07/1963	Vehicle refueling	-	-	-
T875	No. 2 fuel oil	1,000	-	Out of service	Steel	None	None
970	-	675	07/30/59	-	-	-	-

FINAL PAGE

ADMINISTRATIVE RECORD

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